



THE GEORGE WASHINGTON UNIVERSITY
UNIVERSITY BULLETIN

2014-2015

The George Washington University

University Bulletin

2014-2015

Columbian College of Arts and Sciences
Health Sciences Programs in the School of Medicine and Health Sciences
School of Engineering and Applied Science
Graduate School of Education and Human Development
School of Business
Elliott School of International Affairs
Milken Institute School of Public Health
College of Professional Studies
School of Nursing

This bulletin covers GW's degree programs and courses for the schools listed here, with the regulations that pertain to academic programs. For information on GW's professional schools that are not part of this bulletin, see the following websites: www.law.gwu.edu and www.smhs.gwu.edu.

The website www.gwu.edu contains institutional information as well as updated and expanded information on all GW schools, departments, and programs.

Information in this Bulletin is generally accurate as of June 2014. The University reserves the right to change courses, programs, fees, and the academic calendar, or to make other changes deemed necessary or desirable, giving advance notice of change when possible.

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THE UNIVERSITY

ABOUT THE UNIVERSITY

George Washington was determined to have a great national university in the nation's capital. His hope was that students from all parts of the country would gain a first-hand knowledge of the practice as well as the theory of republican government while being instructed in the arts and sciences. He bequeathed 50 shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." Despite Washington's intentions, The Potomac Company folded and Congress never extended a "fostering hand," so the University did not take shape until a group of Baptist clergymen led by Reverend Luther Rice took up the cause. They raised funds for the purchase of a site and petitioned Congress for a charter. Congress insisted on giving the institution a nonsectarian charter stating "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor, or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages thereof, for or on account of his sentiments in matters of religion."

Columbian College, as it was originally named, took up residence on College Hill, a 46-acre tract between the present 14th and 15th Streets extending from Florida Avenue to Columbia Road. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University.

By 1918, the University had moved to the Foggy Bottom neighborhood—between 19th and 24th Streets, south of Pennsylvania Avenue—in the heart of Washington, D.C. The more than 100 buildings are situated on 43 acres bordered by the White House, the John F. Kennedy Center for the Performing Arts, the State Department, and the World Bank, as well as numerous federal agencies, national galleries, and museums.

GW's Virginia Science and Technology Campus (<http://virginia.gwu.edu>), initiated for graduate studies, research projects, and professional development programs, is located along the high-tech corridor on Route 7, just to the west of Route 28, in Loudoun County. In 1998, GW established The George Washington University at Mount Vernon College; the Mount Vernon Campus is on Foxhall Road in Northwest Washington.

Currently, the University's enrollments total more than 25,000, of which 10,100 are undergraduates, about 14,600 are graduate and professional students, and some 500 are nondegree students. The students come from all 50 states and about 130 different countries.

MISSION

Mission Statement

The George Washington University, an independent academic institution chartered by the Congress of the United States in 1821, dedicates itself to furthering human well-being. The University values a dynamic, student-focused community stimulated by cultural and intellectual diversity and built upon a foundation of integrity, creativity, and openness to the exploration of new ideas.

The George Washington University, centered in the national and international crossroads of Washington, D.C., commits itself to excellence in the creation, dissemination, and application of knowledge.

To promote the process of lifelong learning from both global and integrative perspectives, the University provides a stimulating intellectual environment for its diverse students and faculty. By fostering excellence in teaching, the University offers outstanding learning experiences for full-time and part-time students in undergraduate, graduate, and professional programs in Washington, D.C., the nation, and abroad. As a center for intellectual inquiry and research, the University emphasizes the linkage between basic and applied scholarship, insisting that the practical be grounded in knowledge and theory. The University acts as a catalyst for creativity in the arts, the sciences, and the professions by encouraging interaction among its students, faculty, staff, alumni, and the communities it serves.

The George Washington University draws upon the rich array of resources from the National Capital Area to enhance its educational endeavors. In return, the University, through its students, faculty, staff, and alumni, contributes talent and knowledge to improve the quality of life in metropolitan Washington, D.C.

ACCREDITATION

Accreditation

The George Washington University is accredited by its regional accrediting agency, the Middle States Commission on Higher Education (<http://www.msche.org>).

The Law School (<http://www.law.gwu.edu>) is a charter member of the Association of American Law Schools (<http://www.aals.org>) and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association (<http://www.americanbar.org>).

The School of Medicine and Health Sciences (<http://smhs.gwu.edu>) has had continuous approval by its accrediting body, which is currently the Liaison Committee on Medical Education (<http://www.lcme.org>), sponsored jointly by the American Medical Association (<http://www.ama-assn.org>) and the Association of American Medical Colleges (<https://www.aamc.org>). The medical laboratory science program is

accredited by the National Accrediting Agency for Clinical Laboratory Science (<http://www.nacls.org>). The Commission on Accreditation of Allied Health Education Programs (<http://www.caahep.org>) has accredited the program in Physician Assistant. The physical therapy program is accredited by the Commission on the Accreditation of Physical Therapist Education (<http://www.captionline.org>) of the American Physical Therapy Association.

In the School of Nursing (<http://nursing.gwu.edu>), the Bachelor of Science in Nursing, Master of Science in Nursing, and Doctor of Nursing Practice are accredited by the Collegiate Commission on Nursing Education (<http://www.aacn.nche.edu/ccne-accreditation>).

In the Milken Institute School of Public Health (<http://publichealth.gwu.edu>), the public health programs have full accreditation from the Council on Education for Public Health (<http://ceph.org>). The program in health services administration is accredited by the Commission on Accreditation of Healthcare Management Education (<http://www.cahme.org>).

In the School of Engineering and Applied Science (<http://www.seas.gwu.edu>), the Bachelor of Science programs in civil, mechanical, electrical, biomedical, and computer engineering are accredited by the Engineering Accreditation Commission of ABET, Inc (<http://www.abet.org>). The Bachelor of Science computer science curriculum is accredited by the Computing Accreditation Commission of ABET, Inc (<http://www.abet.org>).

The Graduate School of Education and Human Development (<http://gsehd.gwu.edu>) is a charter member of the American Association of Colleges for Teacher Education (<http://aacte.org>) and is accredited by the Council for the Accreditation of Educator Preparation (<http://www.ncate.org>) and the District of Columbia Office of the State Superintendent of Education (<http://sboe.dc.gov>) for its eligible master's, specialist, and doctoral degree programs; the master's programs in school counseling and clinical mental health counseling and the doctoral program in counseling are accredited by the Council for Accreditation of Counseling & Related Educational Programs (<http://www.cacrep.org>); the master's program in rehabilitation counseling is accredited by the Council for Rehabilitation Education (<http://www.core-rehab.org>).

The School of Business (<http://business.gwu.edu>) is a member of AACSB International-The Association to Advance Collegiate Schools of Business (<http://www.aacsb.edu>); the Association accredits its undergraduate and graduate business administration and accountancy programs. The programs in accountancy satisfy the educational requirements for the Certified Public Accountant and the Certified Management Accountant professional examinations.

The Elliott School of International Affairs (<http://elliott.gwu.edu>) is a member of the Association of Professional Schools of International Affairs (<http://www.apsia.org>).

In Columbian College of Arts and Sciences (<http://columbian.gwu.edu>), the B.F.A. and M.F.A. in interior design are accredited by the Council for Interior Design Accreditation (<http://accredit-id.org>). The Department of Chemistry is on the approved list of the American Chemical Society. (<http://www.acs.org>) The Department of Music is an accredited member of the National Association of Schools of Music (<http://nasm.arts-accredit.org>). The Ph.D. program in clinical psychology in the Department of Psychology and the Psy.D. program in the Center for Professional Psychology are on the approved list of the American Psychological Association. (<http://www.apa.org>) The M.A. program in speech-language pathology is accredited by the Education and Training Board of the Boards of Examiners in Speech-Language Pathology and Audiology. The M.P.A. and M.P.P. programs are on the approved list of the National Association of Schools of Public Affairs and Administration (<http://www.naspaa.org>).

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OFFICERS OF ADMINISTRATION

The University

Steven Knapp, *President*
 Steven Lerman, *Provost and Executive Vice President for Academic Affairs*
 Leo M. Chalupa, *Vice President for Research*
 Louis H. Katz, *Executive Vice President and Treasurer*
 Michael Morsberger, *Vice President for Development and Alumni Relations*
 Beth Nolan, *Senior Vice President and General Counsel*
 Lorraine Voles, *Vice President for External Relations*
 Sabrina Ellis, *Vice President for Human Resources*
 Aristide Collins, *Vice President and Secretary of the University*

Deans of the Schools

Columbian College of Arts and Sciences—Ben Vinson III
 School of Medicine and Health Sciences—Jeffrey Scott Akman
 Law School—Gregory E. Maggs (*Interim*)
 School of Engineering and Applied Science—David S. Dolling
 Graduate School of Education and Human Development—Michael J. Feuer
 School of Business—D.C. Kayes (*Interim*) / L. Livingstone (as of August 2014)
 Elliott School of International Affairs—Michael E. Brown
 School of Public Health and Health Services—Lynn R. Goldman
 College of Professional Studies—Ali Eskandarian
 School of Nursing—Jean Johnson

DEGREES OFFERED

Degrees offered by the George Washington University

Columbian College of Arts and Sciences: Bachelor of Arts (B.A.), Bachelor of Fine Arts (B.F.A.), Bachelor of Science (B.S.), Master of Arts (M.A.), Master of Fine Arts (M.F.A.), Master of Forensic Sciences (M.F.S.), Master of Public Administration (M.P.A.), Master of Public Policy (M.P.P.), Master of Science (M.S.), Master of Philosophy (M.Phil.), Master of Psychology (M.Psy.), Doctor of Philosophy (Ph.D.), and Doctor of Psychology (Psy.D.)

School of Medicine and Health Sciences: Bachelor of Science in Health Sciences (B.S.H.S.), Master of Science in Health Sciences (M.S.H.S.), Doctor of Occupational Therapy (O.T.D.), Doctor of Physical Therapy (D.P.T.), and Doctor of Medicine (M.D.)

Law School: Juris Doctor (J.D.), Master of Laws (LL.M.), Master of Studies in Law (M.S.L.), and Doctor of Juridical Science (S.J.D.)

School of Engineering and Applied Science: Bachelor of Science (B.S.), Bachelor of Arts (B.A.), Master of Science (M.S.), Engineer (Engr.), Applied Scientist (App.Sc.), and Doctor of Philosophy (Ph.D.)

Graduate School of Education and Human Development: Master of Arts in Education and Human Development (M.A.Ed.&H.D.), Master of Arts in Teaching (M.A.T.), Master of Education (M.Ed.), Education Specialist (Ed.S.), and Doctor of Education (Ed.D.)

School of Business: Bachelor of Accountancy (B.Accy.), Bachelor of Business Administration (B.B.A.), Bachelor of Science (B.S.), Master of Accountancy (M.Accy.), Master of Business Administration (M.B.A.), Master of Science in Business Analytics (M.S.B.A.), Master of Science in Finance (M.S.F.), Master of Science in Government Contracts (M.S.G.C.), Master of Science in Information Systems Technology (M.S.I.S.T.), Master of Science in Project Management (M.S.P.M.), Master of Tourism Administration (M.T.A.), and Doctor of Philosophy (Ph.D.)

Elliott School of International Affairs: Bachelor of Arts (B.A.), Master of Arts (M.A.), Master of International Policy and Practice (M.I.P.P.), and Master of International Studies (M.I.S.)

Milken Institute School of Public Health: Bachelor of Science (B.S.), Master of Science (M.S.), Master of Public Health (M.P.H.), Master of Health Administration (M.H.A.), and Doctor of Public Health (Dr.P.H.)

College of Professional Studies: Associate in Professional Studies (A.P.S.), Bachelor of Professional Studies (B.P.S.), and Master of Professional Studies (M.P.S.)

School of Nursing: Bachelor of Science in Nursing (B.S.N.),
Master of Science in Nursing (M.S.N.), Doctor of Nursing
Practice (D.N.P.)

UNIVERSITY REGULATIONS

Students enrolled in the University are required to conform to the following regulations and to comply with the requirements and regulations of the school in which they are registered. Students who withdraw or are suspended, or who, for any other reason, are not registered at the University for one semester or more, may reapply and, if readmitted, continue their program only under the regulations and requirements in force at the time of return.

If a student knowingly makes a false statement or conceals material information on an application for admission or any other University document, the student's registration may be canceled. If such falsification is discovered after the student has matriculated at the University, the student may be subject to dismissal from the University. Such a student will be ineligible (except by special action of the faculty) for subsequent registration in the University.

Registration

Information on registration procedures is stated on the Registrar's Office website (<http://registrar.gwu.edu/registration>).

Registration in courses is open only to those persons formally admitted to the University by the appropriate admitting office and to continuing students in good standing.

Students may not register concurrently in this University and another institution without the prior permission of the dean of the school in which they are registered in this University. Registration is not complete until all financial obligations have been met. Individuals without a valid registration may not attend class or earn any course credit.

Eligibility for Registration

Registration for the following categories of on-campus students is held on the days of registration indicated on the Registrar's Office website (<http://registrar.gwu.edu>). A student who is suspended or whose record is encumbered for any reason is not eligible to register. Registration in a given course may be denied to non-degree students by the Office of Non-Degree Students (<http://www.gwu.edu/non-degree>) when space is needed for degree candidates.

New Student

Upon receipt of a letter of admission and payment of any required deposit, new students are eligible for registration on the stated days of registration. Registration for new freshmen are typically conducted on stated days as part of the Colonial Inauguration (<http://ci.gwu.edu>) orientation program.

Readmitted Student

A student previously registered in the University who was not registered during the preceding semester must apply for and

be granted readmission by the appropriate admitting office before being eligible for registration.

Continuing Student

A student registered on campus in the immediately preceding semester or the summer session preceding the fall semester is eligible to register assuming good standing and enrollment in a continuing program.

Completion of Registration

Registration is not complete until financial obligations have been fulfilled. Students who do not complete their financial obligations in a timely manner may have their registration canceled and will not be permitted to attend class.

Registration for Consortium Courses

Degree students interested in taking courses at any of the other institutions in the Consortium of Universities of the Washington Metropolitan Area, Inc. (<http://www.consortium.org/consortium>), should consult the program announcements of the other institutions. Consortium registration forms and instructions (<https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/consortium-form.pdf>) may be obtained from the Office of the Registrar. In order to participate in the Consortium program, students must obtain the approval of an advisor and should ascertain from the department of the institution where the course is taught whether they are eligible for the course and whether there is space in the class. Specific inquiries should be addressed to the Registrar's Office. Detailed information concerning Consortium policy and procedures is available on the Registrar's Office website (<http://registrar.gwu.edu/consortium>).

Adding and Dropping Courses

During the registration period (before the end of the second week of classes) students may add or drop courses using GWeb (<https://banweb.gwu.edu>). After the second week of classes and prior to the end of the fourth week, students who wish to add or drop a course must complete an RTF-EZ Form (<https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/RTF-EZ.pdf>) and submit the form to the Office of the Registrar in Colonial Central; forms are available on line, at deans' offices, and in the Office of the Registrar. Adding a course after the second week requires a signature of the instructor or other authorized member of the department. After the fourth week of classes, students who wish to add or drop a course must complete a Registration Transaction Form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/reg_transaction_form.pdf) and submit the form to their advising office.

A course dropped during the first four weeks of classes will not appear on the student's transcript. A course dropped after the fourth week but before the end of the eighth week will be assigned a notation of *W* (Authorized Withdrawal).

The deadline for dropping a course without academic penalty is the end of the eighth week of classes in the fall and spring semesters. After the end of the eighth week of classes, dropping a course without academic penalty is only possible after the student presents a petition to the dean and receives written permission.

All charges for courses from which the student withdraws are subject to the refund policy listed under Fees and Financial Regulations in this Bulletin. Failure to withdraw by these procedures can result in an extended financial obligation and the recording of a grade of *F* (Failure) or a notation of *Z* (Unauthorized Withdrawal).

Changes in Program of Study

Changes Within a School

A student may not substitute one course for another within an established program of study or change status from credit to audit or from audit to credit without the approval of the dean of the school in which he or she is registered. Change from one major field to another within the same school may be made with the approval of the dean.

Undergraduate Transfer within the University

Application for transfer to another school must be made to the appropriate admitting office on the form provided by the office concerned. Students transferring within the University are advised to study carefully the requirements listed under Graduation Requirements and to note that unless otherwise specified, in all undergraduate divisions, 30 credit hours, including at least 12 credit hours in the major field, must be completed while registered in the school from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly the requirements that must be fulfilled. A maximum of 45 credit hours earned through the Office of Non-Degree Students (<http://www.gwu.edu/non-degree>) may be applied toward a bachelor's degree in the degree-granting schools of the University.

Graduate Transfer within the University

Application for transfer to another school must be made to the appropriate admitting office on the form provided by the office concerned.

Grades

Grades are made available to students through the Office of the Registrar after the close of each semester. The following grading systems are used:

Undergraduate

- *A* Excellent
- *B* Good
- *C* Satisfactory
- *D* Low Pass
- *F* Fail

Other grades that may be assigned are: *A–*, *B+*, *B–*, *C+*, *C–*, *D+*, and *D–*.

Symbols that may appear include:

- *AU* Audit
- *I* Incomplete
- *IPG* In Progress
- *W* Authorized Withdrawal
- *Z* Unauthorized Withdrawal
- *P* Pass
- *NP* No Pass
- *R* Need to Repeat Course

Graduate

- *A* Excellent
- *B* Good
- *C* Satisfactory
- *F* Fail

Other grades that may be assigned are: *A–*, *B+*, *B–*, *C+*, and *C–*.

Symbols that may appear include:

- *AU* Audit
- *I* Incomplete
- *IPG* In Progress
- *W* Authorized Withdrawal
- *Z* Unauthorized Withdrawal
- *CR* Credit
- *NC* No Credit

Except for courses that specifically state that repetition for credit is permitted, a candidate for a degree at this University may not repeat a course in which a grade of *D–* for undergraduate students or *C–* for graduate students or better was received, unless required to do so by the department concerned. A written statement, indicating that the student is required to repeat the course, must be submitted to the student's dean by the appropriate department chair.

The symbol of *Z* is assigned when students are registered for a course that they have not attended or have attended only briefly, and in which they have done no graded work. At the end of the academic year, students' records are reviewed; if there is more than one *Z* per semester, a student's record will be encumbered until released by the student's advisor or academic dean. The symbol of *Z* is not a grade but an administrative notation.

Incompletes

The symbol *I* (Incomplete) indicates that a satisfactory explanation has been given the instructor for the student's inability to complete the required course work during the semester of enrollment. At the option of the instructor, the

symbol *I* may be recorded if a student, for reasons beyond the student's control, is unable to complete the work of the course, and if the instructor is informed of, and approves, such reasons before the date when grades must be reported. This symbol may be used only if the student's prior performance and class attendance in the course have been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded *F*, Failure. If acceptable reasons are later presented to the instructor, that instructor may initiate an appropriate grade change. The course work must be completed within the designated time period agreed upon by the instructor and student, but no more than one calendar year from the end of the semester in which the course was taken. All students who receive an Incomplete must maintain active student status during the subsequent semester(s) in which course work is being completed. If not registered in other classes during this period, the student must register for Continuous Enrollment status.

When work for the course is completed, the instructor will submit the final grade to the Office of the Registrar and, beginning with courses taken in the Fall 2014 semester, the final grade will replace the symbol *I*. If work for the course is not completed within the designated time, the grade will be automatically converted to a grade of *F*, Failure, 0 quality points, and the grade-point average and academic standing recalculated.

For courses taken through the Summer 2014 term, the grade earned will be indicated in the form of *I*, followed by the grade. The indication of *I* cannot be removed and remains on the student's permanent academic record even after the course has been successfully completed.

The Grade-Point Average

Scholarship is computed in terms of the grade-point average, obtained by dividing the number of quality points by the number of credit hours for which the student has registered, both based on his or her record in this University. The grade-point average is computed as follows for each credit hour for which the student has registered as a degree-seeking student:

- A 4.0
- A– 3.7
- B+ 3.3
- B 3.0
- B– 2.7
- C+ 2.3
- C 2.0
- C– 1.7
- D+ 1.3
- D 1.0
- D– .7
- F 0

Although credit value for a course in which a grade of *F* is earned appears on the transcript for the purpose of calculating the grade-point average, no academic credit is awarded. In the case of a student who is allowed to repeat a course, the first grade received remains on the student's record and is included in the grade-point average. Courses marked AU, CR, I, IPG, NC, NP, P, R, W, or Z are not considered in determining the average, except that courses marked *I* will be considered when a final grade is recorded. With the exception of Consortium courses, grades in courses taken at other institutions are not considered in computing the grade-point average.

Latin Honors

Bachelor's degrees with honors are awarded to students whose academic records give evidence of particular merit. The student's grade-point average determines the level of honors as follows:

- *cum laude* 3.4–3.59
- *magna cum laude* 3.6–3.79
- *summa cum laude* 3.8–4.0

The grade-point average includes all course work completed at GW. To be eligible for an honors designation, a student must complete at least 60 hours of course work with letter grades (grades included in calculating the grade-point average) at GW.

The grade-point average is calculated by the Office of the Registrar (<http://registrar.gwu.edu>), and the honors designation is entered on the transcript and diploma of those students who earn an honors designation. If Latin honors are entered in the commencement program, honors status will be determined on the basis of work completed by the end of the seventh term and entered only for those students who have completed seven-eighths of the credit hours required for the degree. Latin honors indicated on the diploma are calculated on the basis of all course work completed. The diploma and transcript are the official indication that a degree was conferred and Latin honors awarded.

Special Honors

Special Honors may be awarded by the faculty to any undergraduate member of the graduating class for outstanding achievement in the student's major field on recommendation of the major department. The student must fulfill all of the following requirements:

1. Candidacy for Special Honors must be approved by the faculty member representing the major department or field not later than the beginning of the senior year.
2. Such other conditions as may be set at the time the candidacy is approved must be met.
3. At least one-half of the courses required for the degree must have been completed at GW.
4. The specific minimum requirement of the school in which the student is registered must be fulfilled as follows:

- a. Columbian College of Arts and Sciences—a grade-point average of 3.0 on all course work taken at GW;
- b. the Elliott School of International Affairs—a grade-point average of 3.7 on all course work taken at GW;
- c. Milken Institute School of Public Health—a grade-point average of 3.25 on all course work taken at GW. Special Honors awards appear on the transcript.

Double Majors

Undergraduates can declare no more than two majors; they can pursue minors in addition to the two majors if they wish but are generally advised against pursuing too many specializations.

Students who graduate with the requisite hours for one degree, having fulfilled the major requirements in more than one department, program, and/or school, will receive one degree. They must select a primary degree and major, as only the primary degree will show on the diploma, along with the two majors.

Students who complete the major requirements in a school other than their own in addition to the major requirements in the school in which they are enrolled (assuming that there is an agreement allowing such between the relevant schools) will receive the degree in the major of their own school and a notation on the transcript and diploma that testifies to completion of requirements for a secondary major. It is understood that requirements of the secondary major do not include the general education requirements of the second school.

Students who complete the major requirements for a degree different from the one they will receive in their own school will receive the degree of the relevant major in their own school. For example, a SEAS student completing the degree requirements for a B.S. in computer science and the major requirements for a B.A. in fine arts will receive a B.S. in computer science with a secondary major in fine arts.

Students who complete two majors in the same school also receive one degree with two majors; if one major leads to a B.A. and one to a B.S., the student must declare a primary major and will receive the degree associated with that major.

Double Degrees

In order to receive two bachelor's degrees from GW simultaneously, a student must first have applied to and been admitted by the school or college that offers the second degree. To apply for the second degree, the student must have an overall GW grade-point average of at least 3.3 and have not completed more than 90 credits toward graduation. The student must satisfy the general and related requirements for the first degree and the major requirements for both degrees. In the process, the student must complete at least an additional 30 credits, chosen in consultation with the student's advisor from each major, program, or school, beyond the credits

required to earn one degree. At least 90 of the total credits required for the two degrees must be earned at or through the University. Different requirements apply for specific joint degree and dual degree programs.

Minors

Students may not declare a minor in the same subject in which they have declared a major. Consult the school's students services office for specific questions.

Graduation Requirements

Degrees are conferred in January, May, and August. To be eligible for graduation a student must have met the admission requirements of the school in which registered; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree as stated in this bulletin; filed an application for graduation by the published deadline date; and be free from all indebtedness to the University. Enrollment is required for the semester or summer at the close of which the degree is to be conferred, and all degree requirements must be completed by the last day of final examinations for that semester or summer session. Undergraduates who pursue a double major across two schools must complete the primary major in their own school in order to graduate. A second major may supplement the primary major but may not substitute for it.

The minimum cumulative grade-point average required for graduation is 2.0 for undergraduate students and 3.0 for graduate students.

Participation in the Commencement Ceremony

Participation in the annual commencement ceremony held in May is open to students who have applied to graduate in the current spring semester or who graduated the preceding fall semester or summer session. With the exception of doctoral candidates, all students, graduate or undergraduate, who need no more than 9 credit hours to complete their degree requirements, may participate in May commencement ceremonies if there is a reasonable expectation that they will be able to obtain the needed credits during the following summer. The maximum of 9 credit hours is firm and not subject to petition.

Graduate students whose program includes a thesis or dissertation must meet the following Electronic Theses and Dissertations (ETD) deadlines for graduation in the respective semesters: for theses, May 15 for spring, January 15 for fall, and August 15 for summer; for dissertations, April 1 for spring, January 15 for fall, and August 15 for summer.

Doctoral candidates who have not successfully defended their dissertation and met the ETD deadline may not participate in either the May commencement or hooding ceremony.

Students who apply after the published deadlines are not guaranteed commencement materials. Summer graduates who

elect to attend the preceding May ceremony must apply for graduation no later than March 15.

Graduate Thesis or Dissertation

A thesis or dissertation submitted in partial fulfillment of requirements for a degree must be presented in its final form by the deadline set by the school concerned. Accepted theses and dissertations, with accompanying files, become the property of the University. Accepted theses and dissertations are submitted electronically; the student pays a processing fee directly to Proquest/UMI. See the appropriate school in this Bulletin for regulations governing theses and dissertations.

Continuous Enrollment Status

Once entered in a degree program, a student is expected to be continuously enrolled and actively engaged in fulfilling the requirements for the degree each semester of the academic year until such time as the degree is conferred. A student is considered to be continuously enrolled when registered for courses through GW or when registered for Continuous Enrollment and engaged in and appropriately registered for activities such as the following, with the prior approval of the school in which the student is enrolled: cooperative work semester; study abroad program; attendance at another institution with prior approval to have work transferred back to the GW program; completion of outstanding work in courses in which a grade of Incomplete or In Progress was received; or non-course instructional activities unique to the particular school. This status is generally limited to one year. Should the student break continuous enrollment at the University and not request and be granted a leave of absence (see below), he or she must apply for readmission and, if granted, be subject to the requirements and regulations then in force.

Leave of Absence

Should a degree student find it necessary to interrupt active pursuit of the degree, he or she may petition the dean for a leave of absence for a specific period of time, generally limited to one calendar year. A degree student who discontinues active enrollment in degree studies without being granted a leave of absence, or a student granted a leave who does not return to active study at the close of the period of approved absence, must apply for readmission and be subject to the regulations and requirements then in force. The right to use of University facilities is suspended while the leave is in effect.

Policy Regarding Students Called to Active Military Duty

Any student who is a member of a military reserve unit or the National Guard and is activated or called to active duty early in a semester or summer session automatically will be entitled to a full refund of all tuition and fees that he or she has paid toward the expenses of that academic term. If the notification of the call to active duty comes after the mid-term examinations or after other substantial graded work has been completed, the student will have the option of either taking

a full refund of tuition and fees or taking an Incomplete in his or her courses with the privilege of returning to complete all required course work at some future date without payment of any further tuition and fee charges. It is the responsibility of the student to present evidence of his or her activation to the Office of Student Accounts (<http://studentaccounts.gwu.edu>) and to request the appropriate refund.

Should a degree student called up for active duty find it necessary to interrupt active pursuit of the degree, he or she may petition the dean for a leave of absence for a specified period of time, generally limited to one calendar year. Deans are encouraged to grant any request to extend the leave of absence for longer than the customary period should military service require an absence of more than one year. All students on active duty will be automatically exempted from the request for a voluntary library contribution without requiring any communication from them or their initials on the bill.

Complete Withdrawal From the University

A degree-seeking student who wishes to withdraw from all courses during a given semester must complete a Complete Withdrawal Form (<http://registrar.gwu.edu/complete-withdrawal-form>) and submit it to the Office of the Registrar (<http://registrar.gwu.edu>). Forms are available on line, at deans' offices, and in the Office of the Registrar. The deadline for complete withdrawal from all courses without academic penalty is the end of the eighth week of classes. Complete withdrawal after the eighth week requires a petition to the dean.

All charges for courses from which the student withdraws are subject to the refund policy found at the Registrar's Office website. Failure to complete a Complete Withdrawal Form (<http://registrar.gwu.edu/complete-withdrawal-form>) can result in an extended financial obligation and the recording of grades of F (Failure) or notations of Z (Unauthorized Withdrawal).

The University is authorized to award the degree of Associate in General Studies under designated circumstances. This degree may be awarded to students in good standing who must leave GW after completing 60 credit hours in residence in a degree-granting GW school; students should consult the dean of their school about additional requirements for awarding of the Associate in General Studies.

University Policies and Definitions Right to Change Rules and Programs

The University reserves the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine. The right is reserved by the University to make changes in programs without notice whenever circumstances warrant such changes.

University Policy on Equal Opportunity

The George Washington University does not unlawfully discriminate against any person on any basis prohibited by federal law, the District of Columbia Human Rights Act, or other applicable law, including without limitation, race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, or gender identity or expression. This policy covers all programs, services, policies, and procedures of the University, including admission to education programs and employment.

Inquiries concerning this policy and federal and local laws and regulations concerning discrimination in education and employment programs and activities may be directed to:

Office of Equal Employment Opportunity and Affirmative Action (<http://hr.gwu.edu/eeo>)
Suite 320
2033 K Street NW
Washington DC 20052
(202) 994-9656

Inquiries may also be directed to the U.S. Department of Education Office for Civil Rights, the U.S. Equal Employment Opportunity Commission, or the applicable state or local agency (for example, the District of Columbia Office of Human Rights).

Questions regarding protections against discrimination on the basis of sex may be directed to:

Title IX Coordinator
Vice Provost for Diversity and Inclusion (<http://diversity.gwu.edu>)
Rice Hall 813
2121 Eye Street NW
Washington DC 20052
(202) 994-7440

Questions regarding the protections against discrimination on the basis of disability may be directed to the University's Disability Services Coordinators (<http://gwired.gwu.edu/dss>). Students may contact:

Associate Dean of Student Affairs
Administrative Services
Office of the Dean of Student Affairs (<http://students.gwu.edu>)
Rice Hall 401
2121 Eye Street NW
Washington DC 20052
(202) 994-6710

Other members of the university community may contact:

Executive Director of Equal Employment Opportunity and Affirmative Action
Suite 320
2033 K Street NW
Washington DC 20052

(202) 994-9633

To request disability accommodations, students should contact the Office of Disability Support Services (<http://gwired.gwu.edu/dss>) at (202) 994-8250 or dss@gwu.edu. Employees and other members of the University community should contact the Office of Equal Employment Opportunity and Affirmative Action at (202) 994-9656 or eeo@gwu.edu.

Study Abroad

Undergraduates who wish to study abroad during the academic year should contact the Office for Study Abroad (<http://studyabroad.gwu.edu>) concerning eligibility, appropriate procedures, and requirements for participation. Participants are billed GW charges for study abroad, rather than fees indicated by the visited school or program. To be eligible for the transfer of academic credit from study abroad, GW students must select a program from the University's authorized list of study abroad programs. Students must have a 2.75 cumulative grade-point average at the time of application and must have completed 45 credit hours prior to departure. Transfer students must complete one full semester at GW prior to application. Students who have a significant disciplinary history or who are on academic or disciplinary probation at the time of application are not eligible to study abroad. All programs of study abroad must be approved on the required forms prior to departure. Non-GW course credits earned in authorized programs with a C or above are transferable toward the appropriate degree at GW, provided there is no duplication of work done previously and faculty have designated each course with a GW course equivalent. Participants agree to abide by all procedures and regulations for study abroad as indicated in the Study Abroad Handbook and Participation Agreement distributed through the Office for Study Abroad. In addition to academic year programs, study abroad is available at varying locations during the summer.

Non-Degree Students

The Office of Non-Degree Students (<http://www.gwu.edu/non-degree>) makes credit-bearing courses available to those who are not degree candidates at GW and to students who have been admitted to the University for a future semester. Non-degree students are allowed a maximum per semester of 17 credits, except in special circumstances as approved by the director. Medical and law courses are not available to non-degree students. Special program credit limits may vary.

Non-degree applicants must have appropriate academic preparation prior to enrollment. Prerequisites are specified in this Bulletin in the course description. Contact the department concerned for further information regarding appropriate academic background for a particular course. An applicant who has previously attended this or another college or university must be in good standing at that institution. An applicant who has been suspended from any educational institution will not be eligible to enroll as a non-degree student for one calendar year after the effective date of the suspension. An applicant

who has been denied admission within this University will not be eligible to enroll as a non-degree student for the same semester for which the application was denied. Applications and information on registration are available online (<http://www.gwu.edu/non-degree>). Prospective and registered students should acquaint themselves with the regulations concerning attendance and withdrawal stated in this section or at www.gwu.edu/non-degree (<http://www.gwu.edu/non-degree>).

If a non-degree student takes a course for which the symbol *I* (Incomplete) is assigned, the instructor normally sets a period (maximum of one year) within which the uncompleted work must be made up. An Incomplete that is not changed within one calendar year becomes a grade of *F* on the student's record.

Academic Integrity

The University community, in order to fulfill its purposes, must establish and maintain guidelines of academic behavior. All members of the community are expected to exhibit honesty and competence in their academic work. Incoming students have a special responsibility to acquaint themselves with, and make use of, all proper procedures for doing research, writing papers, and taking examinations. Members of the community will be presumed to be familiar with the proper academic procedures and held responsible for applying them. Deliberate failure to act in accordance with such procedures will be considered academic dishonesty. Acts of academic dishonesty are a legal, moral, and intellectual offense against the community and will be prosecuted through the proper University channels. The University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity>) can be found at the Office of Academic Integrity (<http://studentconduct.gwu.edu>).

Patent and Copyright Policies

Students who produce creative works or make scientific discoveries while employed or supported by the University or through substantial use of University resources are subject to the University's patent and copyright policies. See the Office of the Vice President for Research (<http://research.gwu.edu>).

Human Research Requirements

Students who are planning to conduct research involving the use of human subjects (for a thesis, dissertation, journal article, poster session, etc.) must obtain Institutional Review Board (IRB) (<http://humanresearch.gwu.edu/institutional-review-board-process>) approval before collecting any data. See humanresearch.gwu.edu (<http://humanresearch.gwu.edu>).

English for Academic Purposes

Registration in an English for Academic Purposes (<http://eap.columbian.gwu.edu>) (EAP) course is required of graduate international students on the basis of TOEFL, IELTS, or PTE scores below the required score and determines placement in EAP 6110 or EAP 6111. Every student placed in an EAP

course is required to take that course in the first semester of the academic program. Subsequent registration in successive EAP courses may be required, based upon performance in the initial EAP course and other academic work, as determined by the advisor.

Use of Correct English

A report regarding any student whose written or spoken English in any course is unsatisfactory may be sent by the instructor to the dean of the school, who may assign supplementary work, without academic credit, varying with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the dean.

Name of Record

A student's name of record includes the first name, middle initial or full middle name, and the family name. Nicknames may not be used. The University will change the name of a currently enrolled student on its official records but will require satisfactory evidence of a legal basis for the change. The diploma is awarded under the official name of record at the time of graduation.

Student Status

For the purpose of defining student status, undergraduates taking 12 or more credit hours per semester are considered to be full time, those taking 6 to 11 credits per semester are considered to be half time, and all others are considered to be part time. Generally, an undergraduate becomes a sophomore upon completion of 30 credits, a junior upon completion of 60 credits, and a senior upon completion of 90 credits.

During the fall and spring semesters graduate students taking 9 or more credits are considered to be full time, those taking 4.5 to 8.5 credits are considered to be half time, and all others are considered to be part time. In the summer full-time status requires 6 credits, half-time status, 3 credits. Unless otherwise indicated under the program, all programs of study are offered on both a full-time and part-time basis. International students in F-1 or J-1 immigration status may pursue only full-time programs of study, and such students must register for and complete a full course load each semester as defined by federal regulations.

Graduate students who have completed all course and credit requirements for the degree except dissertation or thesis research may be certified as full-time students provided they are registered for at least 3 credits of dissertation or thesis research, are actively engaged in dissertation or thesis research and writing, and are not employed more than 20 hours per week. Graduate students who have completed all credit requirements for the degree, including dissertation or thesis research, but have not completed all degree requirements, may be certified as full-time students provided they have not exceeded the established time limits for degree completion,

are registered for Continuous Research, and are not employed more than 20 hours per week. Those who meet all conditions stated above but are employed more than 20 hours per week may be certified as half-time students.

Attendance

Students may attend only those classes for which they are officially registered. Regular attendance is expected. Students may be dropped from any course for undue absence. A student suspended for any cause may not attend classes during the period of suspension. Students are held responsible for all of the work of the courses in which they are registered, and all absences must be excused by the instructor before provision is made to make up the work missed.

Credit

Credit is given only after completion of registration in a course and satisfactory completion of the required work, or upon the assignment of advanced standing in accordance with the regulations of the school concerned. Credit that has been applied to the completion of a degree may not subsequently be applied to another degree.

Auditing

A person who has been admitted to the University may be registered, with the permission of the instructor, as an auditor in a class (no academic credit). An auditor is not required to take active part or to pass examinations. A student who takes a course as an auditor may not repeat it later for credit. Tuition is charged at the prevailing rate. A student may not change from audit to credit status or vice versa after the end of the eighth week of classes.

Earning Transfer Credit after Matriculation

All students who plan to attend another institution and apply credit so earned toward graduation from this University must first secure the written approval of their dean. Credit in excess of what might be earned in a similar period in this University will not be recognized. For undergraduates, up to 30 credit hours may be transferred through GW-approved study abroad at non-GW institutions. In addition, as a part of the University residence requirement, no more than 9 credit hours in total can be transferred from colleges or universities after matriculation except by special permission of the appropriate dean. No transfer from two-year institutions is allowed after a student has earned 60 credit hours toward a degree.

Transcripts of Record

Official transcripts of student records are issued upon written request of the student or former student who has paid all charges, including any student loan installments, due the University at the time of the request. A nominal fee is charged for each official transcript. Unofficial copies of transcripts are available to students, by written request, at a nominal fee. Partial transcripts are not issued. Students have access to

their unofficial student record through the GWeb Information System (<https://banweb.gwu.edu>).

Student Conduct

All students, upon enrolling and while attending The George Washington University, are subject to the provisions of the *Guide to Student Rights and Responsibilities*, which outlines student freedoms and responsibilities of conduct, including the Code of Student Conduct (<http://studentconduct.gwu.edu/code-student-conduct>), and other policies and regulations as adopted and promulgated by appropriate University authorities. Copies of these documents may be obtained from the Office of the Dean of Student Affairs (<http://students.gwu.edu>) from the offices of the academic deans. Sanctions for violation of these regulations may include permanent expulsion from the University. Regulations or requirements applicable only to a particular program, facility, or class of students may not be published generally, but such regulations or requirements shall be published in a manner reasonably calculated to inform affected students.

Right to Dismiss Students

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable.

University Policy on the Release of Student Information

The Family Educational Rights and Privacy Act (FERPA) (<http://registrar.gwu.edu/university-policies/#ferpa>) applies to institutional policies governing access to and release of student education records.

The University may release the following directory information upon request: name, local address including e-mail, and telephone number; name and address of emergency contact; dates of attendance; school of enrollment; field of study; enrollment status; credit hours earned; degrees earned; honors received; participation in University-recognized organizations and activities (including intercollegiate athletics); and height, weight, and age of members of athletic teams, as well as likenesses used in University publications. Date of birth will be considered directory information only for the purpose of complying with applicable laws. A student who does not wish such directory information released must file written notice (<https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/confidentialityflag.pdf>) to this effect in the Office of the Registrar.

The University's full policy statement on the release of student information is published in the *Guide to Student Rights and Responsibilities*, available in the Office of the Dean of Student Affairs or the offices of the academic deans. The full statement also appears on the Registrar's Office website (<http://registrar.gwu.edu/university-policies/#ferpa>).

Student Identification Number/Social Security Number

The University has converted from the use of the Social Security Number (SSN) to identify records pertaining to individual students, although the SSN is still needed to identify the student for purposes of financial aid eligibility and disbursement and repayment of financial aid and other debts payable to the University. The SSN is required when applying for financial aid. The Internal Revenue Service requires the University to file information that includes a student's SSN and other information such as the amount paid for qualified tuition, related expenses, and interest on educational loans. This information is used to help determine whether a student, or a person claiming a student as a dependent, may take credit or deduction to reduce federal and/or state income taxes. Many efforts are made to protect the privacy of this number, and a student may request an alternate personal identifier. Further information may be obtained by contacting the Office of the Registrar.

Property Responsibility

The University is not responsible for the loss of personal property. A Lost and Found Office is maintained on campus in the GW Police Department (<http://police.gwu.edu>).

UNDERGRADUATE ADMISSIONS

GW actively seeks students who have a variety of interests, talents, goals, and experiences. Applications from every state and some 100 countries are received every year, allowing the enrollment of a bright, talented, and diverse student body. With far more applications than available spaces, each completed application is carefully reviewed as the Admissions Committee strives to admit those students who have the academic preparation, interests, character, and motivation to thrive and succeed at GW and the greatest potential to contribute to the life of the University.

Freshmen—regular decision

Preference for places in the entering class will be given to students who submit the application with required credentials by January 10.

Applicants from secondary schools must arrange to have sent directly from their schools to the Office of Undergraduate Admissions a complete academic record together with a teacher recommendation and a counselor recommendation. This information should be supplied on the appropriate forms found on our website. Before enrolling, incoming freshmen must provide a complete high school record showing final grades and graduation.

Entrance examinations

Applicants from secondary schools must submit scores on the College Board Scholastic Assessment Test (SAT) or on the American College Testing (ACT) battery. Submission of scores on College Board SAT subject tests is recommended. Score reports must be sent directly to the Office of Undergraduate Admissions from the testing agency.

Freshmen—early decision

High school seniors applying for fall admission as full-time freshmen with The George Washington University as their first choice may wish to take advantage of one of our early decision options. GW has two binding deadlines from which to choose: deadlines are November 10 for Early Decision I and January 10 for Early Decision II. Students accepted as early decision applicants are required to send in the declaration of intent to attend GW, together with appropriate nonrefundable deposits, no later than January 15 for Early Decision I and March 1 for Early Decision II.

Students from foreign institutions

Applications, required records, and scores on the Test of English as a Foreign Language or the International English Language Testing System (see below) and SAT should be received from international students no later than January 10 for regular decision for the fall semester and October 1 for the spring semester.

Required records

At the time the application is sent, students must have the educational institutions previously attended send directly to the GW Office of Undergraduate Admissions copies of official certificates and records listing subjects studied, grades received, examinations taken, and degrees received. Certified copies of diplomas and certificates from all secondary schools, colleges, and universities attended are required. Records of state examinations and certificates are also required. These records become the property of the University and cannot be returned. These documents should be in the language in which the institution keeps its official records. If they are in a language other than English, the copies sent should be accompanied by a certified English translation.

Language tests

All applicants whose first language is not English are required to take the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). In considering candidates for admission, the University looks for a TOEFL score of 550 or above (paper-based) or 80 or above (Internet-based). The University looks for an IELTS score of 6.5 or above. The School of Business requires a minimum score of 600 (paper-based) or 100 or above (Internet-based) on a second taking of the TOEFL. Applicants are responsible for making arrangements to take the test at www.TOEFL.org (<http://www.TOEFL.org>). The completed registration form must be returned well in advance of the semester for which admission is sought. TOEFL scores may not be more than two years old. On the application for the TOEFL, students should specify that the scores be sent to the GW Office of Undergraduate Admissions.

Admitted students whose first language is not English are also required to take an English for Academic Purposes course at GW; this requirement is waived for students with a TOEFL score of at least 600 (paper-based) or 100 (Internet-based) or an IELTS score of at least 7.0.

Financial certificate

A Financial Certificate and Bank Letter must be completed and submitted with the application for admission of all international students planning to study at the University under the authorization of either a student (F) or exchange visitor (J) visa. Satisfactory completion and submission of the Financial Certificate and Bank Letter are required for the issuance of a Form I-20 or DS-2019.

Transfer students

To be considered for admission, undergraduate students from other institutions should submit the application and required credentials by April 1 for fall admission and October 1 for spring admission.

A transfer applicant should be in good standing as to scholarship and conduct at all postsecondary institutions previously attended. An applicant who has attended one

or more institutions of higher education must request each registrar to mail directly to the Office of Undergraduate Admissions a transcript of his or her record, even if credits were not earned or if advanced standing is not desired. In addition, applicants must have their high school record and College Board SAT or ACT test scores sent to the Office of Undergraduate Admissions directly from the high school and testing agency.

Assignment of credit for transfer students

GW's residence requirement limits the amount of transfer credit that can be applied toward a degree. Students must complete at least 60 of the total number of credit hours required for their degree at or through the University; GW credits earned through GW study abroad, GW satellite campuses, GW distance education courses, and Consortium courses are treated as in residence. Students who are subsequently admitted through a GW school or college to earn a second bachelor's degree must complete at least 90 of the total credits required for the two degrees at or through the University.

Provided there is no duplication involved, either through course work or examination, credit may be granted for work successfully completed at other institutions of higher learning. Assignment of transfer credit will depend on the grade earned, the appropriateness of the courses completed elsewhere, the standing of the institution at which the previous work was completed, and the regulations of the GW school in which the credit is to be applied toward a degree.

Transfer credit must satisfy the requirements for the degree sought as stated in this Bulletin. Credit may be accepted provisionally or may require validation by examination or completion of higher-level courses in the same sequence. Transfer credit will not be assigned for course work completed in vocational/technical programs (e.g., secretarial studies) or sub-freshman-level remedial work. Each GW school reserves the right to refuse credit for transfer in whole or in part. Although a grade of *D* in a course is not acceptable for transfer, the course may satisfy a curriculum requirement. School-specific regulations on transfer credit appear in this Bulletin under the school concerned.

Advanced standing and advanced placement

Advanced placement or waiver of a requirement will be granted on the basis of scores on the SAT subject tests as follows: a score of at least 650 waives Hist 1310-11; scores of at least 690 in French or Spanish and of at least 630 in German or Latin waive a two-year language proficiency requirement. Advanced standing (academic credit) is not assigned on the basis of SAT or ACT results.

Credit by AP tests and the international baccalaureate

Assuming there is no duplication, a maximum of 24 credit hours may be assigned upon admission to the University for any combination of the following except as noted below. An incoming student may also be granted advanced placement in a sequence of courses or waiver of a course requirement on the basis of additional college-level course work taken before matriculation, but this will not affect the number of hours needed for the degree.

College board advanced placement (AP) tests

On the basis of a score report sent to the Office of Admissions from the Educational Testing Service at the student's request, undergraduate credit may be awarded for Advanced Placement Tests. Refer to the GW Undergraduate Admissions website for the AP credit assignment chart. Students should arrange for the examinations through the secondary school attended or with the College Board, Advanced Placement Tests, at www.collegeboard.com (<http://www.collegeboard.com>).

International baccalaureate

GW awards 6 to 8 credit hours for Higher-level scores of 6 and above with the exception of English language. Students who have passed English A1 with a grade of 6 or 7 will receive 3 credit hours for Literature. No credit will be assigned for English A2 or English B or for subsidiary-level examination scores.

Advance deposit

After notification of acceptance, a nonrefundable advance deposit will be required of all new undergraduate students. This deposit is due May 1 for freshmen; it is usually due two weeks after admission for transfer students. Full-time readmitted students are required to submit an advance deposit that is usually due two weeks after admission.

Readmission

Previously registered students who wish to resume studies on campus after discontinuing enrollment for one or more semesters (summer sessions excluded) must apply for readmission. Deadlines for readmission applications from students in good academic standing are the same as those for transfer students. Students seeking readmission after having attended other institutions of higher education in the interim must have complete official transcripts sent to the Office of Undergraduate Admissions from all other institutions attended. Students seeking readmission as degree candidates after previous enrollment in nondegree status must submit a standard undergraduate degree application and fee, together with all entrance credentials not previously received or required.

Applicants for readmission are subject to the University regulations in effect at the time of readmission. The application

fee is waived for students applying for readmission after previous enrollment as degree candidates at this University if they have not since registered at another institution.

FEES AND FINANCIAL REGULATIONS

The following fees and financial regulations were adopted for the academic year 2014-15. Information on tuition and fees for the summer is available at summer.gwu.edu (<http://summer.gwu.edu>).

Tuition Fees

For undergraduates entering GW in academic year 2014-15, the University continues its fixed-rate tuition plan, with the following academic-year tuition fee guaranteed not to increase for up to five years of full-time* undergraduate study: \$48,700 for students entering Columbian College of Arts and Sciences, the School of Business, the School of Public Health and Health Services, the School of Engineering and Applied Science, and the Elliott School of International Affairs.

The fixed-rate tuition remains in effect as previously stated for undergraduates in the schools listed above: for those who entered GW in 2013-14, \$47,290; 2012-13, \$45,735; 2011-12, \$44,103; 2010-11, \$42,860.

Half-time, part-time, and non-degree students are charged \$1,355 per credit.

Fees stated here exclude undergraduate nursing and health sciences programs; consult the School of Nursing or the Office of Health Sciences Programs in the School of Medicine and Health Sciences for applicable fees.

The schedule of tuition and fees adopted for graduate programs for the academic year 2014-15 appears at the Students Accounts Office (<http://studentaccounts.gwu.edu>).

* A full-time program is defined as 12-17 credits per semester. Undergraduates taking more than 17 credits per semester will be charged at the rate of 1 credit for each credit exceeding that limit. Undergraduates are not charged for an eighteenth credit if their program includes UW 1020, nor are those in the School of Engineering and Applied Science charged for the eighteenth and nineteenth credits if required by their program.

Student association fee

All students are assessed a student association fee of \$2 per credit. The fee is non-refundable.

Voluntary library fee

Each semester the Registration Schedule and Invoice includes a voluntary gift for the University libraries. Check the box labeled "Library Gift Decline" and omit the amount from your payment if you do not wish to include the library gift in your reimbursement to the University.

Note: The fee structures for campus housing and dining plans can be found at GW Housing (<http://living.gwu.edu>) and GW

Campus Dining (<http://gwcampusdining.com>), respectively. Some courses carry additional fees, such as a laboratory or material fee, charged by semester as indicated in course descriptions; the amount appears in the Schedule of Classes (<http://my.gwu.edu/mod/pws>). Tuition rates for students admitted to the B.A./M.D. program are indicated in the letter of admission.

Continuing research

All master's and doctoral students who have completed their required number of credits (including course work and thesis or dissertation research) must register each subsequent fall and spring semester for 1 credit hour of Continuing Research as specified by the regulations of the school concerned.

Additional course fees

Some courses carry additional fees, such as laboratory or material fees, charged by semester as indicated in course descriptions. The amount appears in the Schedule of Classes (<http://my.gwu.edu/mod/pws>).

Special Fees and Deposits (nonrefundable)

Application fee	\$75
Advance deposit, charged each entering or readmitted full-time undergraduate	\$800
Matriculation fee, charged each entering full-time undergraduate	\$350
Late registration beginning the first day of the semester	\$80
Registration for continuous enrollment or leave of absence	\$35
Late application for graduation (see Calendar)	\$35
Late payment fees (see Past Due Accounts, below)	\$75
Late authorization fee for third-party payment (see Third-Party Payment, below)	\$100
Returned check fee, charged a student whose check is improperly drafted, incomplete, or returned by the bank for any reason	\$35
Waiver examination to qualify for advanced placement	\$25
Engineers' Council fee (charged all SEAS students), per semester	\$8
Study abroad fee	\$400
Transcript fee	\$5
Replacement of lost or stolen picture identification card	\$25
Replacement of diploma	\$50

Payment of tuition for thesis or dissertation research entitles the candidate, during the period of registration, to the advice and direction of the member of the faculty under whom the thesis or dissertation is to be written. Accepted dissertations

and theses are submitted electronically; the student pays a processing fee directly to Proquest/UMI.

Postdoctoral Study

Those who have graduated from George Washington University with a Ph.D., Ed.D., or D.Sc. may continue studies in the University without payment of tuition (contingent upon the availability of space) and may enjoy all University library privileges. Such graduates pay the prevailing charge for one credit hour in order to establish their active membership in the University. The use of laboratory or special library material is paid by the graduate. Special arrangements for such privileges must be made with the dean two months in advance of the semester in which the graduate wishes to register. Post-doctoral work taken under this privilege may not be taken for credit.

Payment of Fees

A student who registers for classes in any semester or session incurs a financial obligation to the University. Payment of tuition and fees is due upon receipt of the Schedule and Invoice or at the time of registration. Except for students on the monthly payment plan, tuition is to be paid in full by the first day of the semester or upon registration if registration is after the first day of the semester. The University reserves the right to revoke the registration, effective to the beginning of the semester, of any student who fails to make full payment. Students whose registrations have been revoked or canceled for failure to make timely payments are not permitted to attend class and may not occupy University housing.

Monthly payment plan

This payment plan is open to all students and is available for the fall and spring semesters only. Students must complete and submit an application by August 15 for the academic year or by January 5 for the spring semester to participate in the plan. Upon approval of the application, the student will be billed for each payment. The monthly payment plan for the academic year begins in June and ends in March, with the first five payments applied to the fall account and the second five applied to spring. For spring semester only, the plan begins in November and ends in March. Under the plan, all payments are due on the first of each month. The student will receive a monthly bill, but no interest or late fees will be charged provided payments are received as scheduled. Students who enroll in the plan after the first month must make up all payments to the month of enrollment. Interest and a late payment fee are assessed all accounts not paid in full by October 5 for fall and March 5 for spring. An outside vendor administers the plan and charges a one-time participation fee in addition to interest and late fees for any payments received late. For more information, see the monthly payment plan (<http://studentaccounts.gwu.edu/monthly-payment-plan>).

Third-party payment

The University accepts employer vouchers or purchase orders that are not contingent upon receipt of grades. Under all circumstances, the charges for tuition and fees remain the responsibility of the student. Authorization from a sponsor to be billed for a student's charges must be received in the Student Accounts Office by the end of the third week of the fall or spring semester. A late authorization fee may be incurred for responses received after these times. Bills are mailed to sponsors in October for the fall semester and in February for the spring semester. Should a sponsor fail to remit payment to the University, the University will contact the student for payment. Students whose employers or sponsors reimburse them for tuition and fees after receipt of grades must pay in full upon receipt of the Schedule and Invoice or at the time of registration to avoid interest, late fees, and/or cancellation of registration. Students whose tuition is paid in full or part by employee benefits or teacher tuition remission must pay any remaining balance by the stated due date to avoid interest, late fees, and/or cancellation of registration.

Past due accounts

Accounts that are past due are encumbered by the University. A student whose account is encumbered may not register for future semesters and may not receive diplomas or transcripts. Late payment fees and interest may also be assessed each month that the account has an overdue outstanding balance. Please see the University's Tuition Payment Disclosure Statement (<http://studentaccounts.gwu.edu/disclosures>) for more information on those fees and billing practices. Accounts that are more than 90 days past due are referred to an agency and/or attorney for collection. The student is then responsible for all charges, costs, and fees due to, or incurred by, the University as well as all costs, fees, and charges incurred by the agency and/or attorney, including attorney's fees. Students whose registrations have been revoked or canceled for failure to make timely payments are not permitted to attend class and may not occupy University housing.

Dishonored/returned checks

A student whose check is returned unpaid by the bank for any reason will be charged a returned check fee and will be responsible for any associated costs and/or attorney's fees incurred by the University should a civil lawsuit or other collection effort be instituted to collect on such dishonored check. In any case where the University has reason to believe that a student presented a dishonored check in bad faith, the University may, in addition to any collection efforts, refer the matter to the proper authorities for criminal prosecution.

Withdrawals and Refunds

Applications for withdrawal from the University or from a course after the registration period must be made in accordance with procedures outlined under University Regulations in the sections Complete Withdrawal From the University, and Adding and Dropping Courses, respectively. Financial aid

recipients must notify the Office of Student Financial Assistance in writing. No refund of the tuition deposit required of entering students is granted.

In authorized withdrawals and changes in schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule for the fall and spring semesters:

1. *Complete withdrawal from all courses (on-campus students):*

Withdrawal dated on or before the end of the first 90% week of the semester

Withdrawal dated on or before the end of the second week of the semester	60%
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Withdrawal dated on or before the end of the third week of the semester	40%
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Withdrawal dated on or before the end of the fourth week of the semester	25%
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Withdrawal dated after the fourth week of the semester	None
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2. *Partial withdrawal:* If the change in program results in a lower tuition charge, the refund schedule above applies to the difference.

3. Regulations governing student withdrawals as they relate to residence hall and food service charges are contained in the specific lease arrangements.

4. *Summer Sessions:* In cases of authorized withdrawals from courses, refunds of 85% of tuition and fees will be made for courses dropped within the first seven calendar days of the start of a session. No refund will be made for courses dropped thereafter.

Courses that do not follow the traditional semester may have different refund policies.

The above information regarding cancellation of tuition charges and fees after withdrawal from the University may not apply to entering students who are recipients of federal aid; those students should check with the Student Accounts Office for the applicable cancellation schedule. Federal regulations require that financial aid recipients use refunds to repay financial aid received for that semester’s attendance. This policy applies to institutional aid as well.

If a recipient of federal financial aid withdraws from the University or reduces his or her course load, federal regulations require that the University reevaluate the student’s eligibility to determine the amount of aid the student is allowed to retain. If there is a credit balance on the student’s account after the federal funds have been adjusted, institutional funds will be recovered from that amount.

In no case will tuition be reduced or refunded because of absence from classes. Authorization to withdraw and

certification for work done will not be given a student who does not have a clear financial record.

FINANCIAL AID

GW offers a comprehensive program of student financial assistance for students. Undergraduate aid consists of two basic types: awards for academic achievement or talent without reference to financial circumstances (merit scholarships) and scholarships, grants, loans, and employment based on both academic achievement and demonstrated financial need. All undergraduate gift aid (institutional scholarships and grants and federal grants) requires that the recipient be working on the first undergraduate degree and be registered for a full-time course load on campus at GW. (Financial aid for study abroad is limited to approved programs.) Loans and housing staff positions not based on financial need are available. In general, continuation of undergraduate aid does not extend beyond ten semesters, or the end of the senior year, or the semester in which the number of credits sufficient to graduate is reached, whichever comes first. (A non-GW study abroad semester counts as one of the ten semesters.) Undergraduate aid does not extend beyond the earning of one undergraduate degree and does not cover semesters in which more than half of a student's courses are at the graduate level.

Gift aid (scholarships, grants, fellowships, assistantships, etc.) is taxable under Internal Revenue Service regulations to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies or is dedicated to other costs, such as room and board. Federal grants may be taxable if, together with other gift assistance, they exceed the allowable costs. In the case of a student who is awarded tuition scholarships, grants, or awards from more than one source, the combined amount cannot exceed tuition charges; institutional aid will be adjusted to this limit.

In general, consideration for student financial assistance is restricted to students in good academic standing who meet the minimum grade-point average for particular awards and are not financially encumbered by any other University office. Awards may be rescinded if satisfactory academic progress standards are not met. GW reserves the right to ask for documentation necessary to determine aid eligibility. Documents submitted as part of aid applications become the property of the University and cannot be returned. Such documents are also governed under the Family Educational Rights and Privacy Act, as amended (FERPA). Federal regulations require GW to report suspected cases of fraud or misrepresentation to the appropriate federal, state, and local authorities.

Disclosures required under federal gainful employment regulations are on the home page of each academic certificate program that has been deemed eligible for Title IV student financial assistance and therefore subject to the Title IV gainful employment regulations. For further information, contact the academic department or school that offers the certificate program. Continued Title IV eligibility for such programs will be assessed on an annual basis.

Information in this section is accurate at the time this Bulletin is posted online. The Board of Trustees reserves the right to change financial aid policies as it deems necessary. Complete student financial aid information and disclosures are available on the web-pages of the Office of Student Financial Assistance. Future changes in federal regulations or institutional policies may alter application requirements, program guidelines, for federal, state and institutional student financial assistance programs.

UNDERGRADUATE

Undergraduate Financial Aid

Merit Aid

The University has merit aid programs of scholarships and awards for students with superior academic credentials or talents. Eligibility is determined at the time of entry to the University only. The programs are based entirely on merit and/or talent, without regard to financial need. Merit or talent scholarships, including GW-sponsored National Merit Awards, cannot be combined.

The following scholarship programs are also available:

The *J.B. and Maurice C. Shapiro Scholarship to the University of Oxford* is awarded each spring to a graduating senior or recent graduate through a competitive process upon the nominee's acceptance to Oxford. To be eligible, applicants must have applied for the Rhodes or British Marshall Scholarships. All of these competitions require high academic standing, evidence of leadership, and dedication to the larger society through community service. The Shapiro Scholarship provides up to two years of study at Oxford, equivalent to the Rhodes Scholarship. The J.B. and Maurice C. Shapiro Endowment funds two scholarships per year—one new and one renewal.

The *Bender Scholarship to the University of Cambridge* is funded by an endowment, the Bender Scholarship Fund. Every other year, the Bender Scholarship is open for competition. Graduating seniors, recent graduates, and third-year law students who participated in the Rhodes and/or British Marshall competitions are eligible for the Bender Scholarship. The endowed scholarship provides for up to two years of study at the University of Cambridge. The award provides for an educational experience equivalent to that of a British Marshall Scholar attending Cambridge. The Bender Scholarship criteria are high academic achievement, evidence of leadership skills or potential, and community service.

Pembroke/CW Program – GW has a special relationship with Pembroke College in Oxford, whereby up to six GW juniors would be placed at the College for one year and enrolled as fully matriculated students of the University of Oxford. These placements are determined in an annual competition that takes place in the fall. The Committee evaluating candidates forwards to Pembroke College applications of the finalists.

Pembroke then makes the final decision on placements. Many GW students have spent a year at Oxford in this program.

Need-Based Aid

GW offers extensive programs of scholarships, grants, loans, and employment based upon demonstrated need. GW participates in the Federal Perkins Loan, Federal Pell Grant, Federal Supplemental Educational Opportunity Grant, Federal Direct Education Loans, and the Federal Work-Study program. All freshman and transfer applicants are required to file both the PROFILE and the Free Application for Federal Student Aid (FAFSA), designating GW to receive their information, and to supply copies of signed federal income tax returns and W2 forms for the current tax year for student and parents (if dependent). For family members employed by an international organization, a letter is required from the employer certifying salary and all benefits.

Incoming freshmen must file applications and supporting credentials for financial aid by February 1 for the next academic year; transfer students, by April 1. Continuing students should access the OSFA web-page for the steps necessary to complete the aid application. The deadline for continuing students is April 30. March 1 is the deadline for the summer sessions. Summer aid is limited to federal or alternative loans. A student must reapply each year for all need-based aid, including need-based scholarships; renewal is contingent upon funds being available when the student completes the application.

The George Washington University Guaranteed Grant and Board of Trustees Scholarship

The GW Guaranteed Grant or Board of Trustees Scholarship is available only to new undergraduate students who are charged full-time tuition according to GW's fixed-tuition initiative and who receive a need-based financial aid package for their initial period of enrollment at the University. This need-based grant or academic scholarship will be part of a student's initial financial aid package and is guaranteed for up to 10 consecutive semesters of full-time undergraduate enrollment at GW. For renewal of the grant or scholarship, the student must be enrolled and be charged as a full-time student and must maintain OSFA published satisfactory academic progress guidelines. The award will be confirmed upon receipt and review of signed copies of the parents' and student's most recent federal tax returns (with requested schedules) and W-2 statements. Students showing additional need beyond the GW Guaranteed Grant/Board of Trustees Scholarship will be considered for assistance from all other resources administered by the Office of Student Financial Assistance. While this grant can be combined with other institutional need-based grant awards, a student may not receive the GW Guaranteed Grant/Board of Trustees Scholarship in combination with merit awards, GW employee benefits, or the GW Family Grant.

The GW Family Grant

A full-time GW undergraduate whose sibling is also attending GW as a full-time undergraduate for the same academic year may qualify for a GW Family Grant amounting to one-

half tuition for the second student. This half-tuition grant can be awarded for the full academic year or for the fall or spring semester only. To qualify, siblings must be enrolled full-time in a first-time, four-year bachelor's degree program and be charged at GW's full-time rate. Students receiving discounted tuition do not qualify. This grant is not available to either sibling if one is enrolled in the Seven-Year B.A./M.D. Program or a non-affiliated study abroad program. More detailed information about GW Family Grant eligibility and renewal requirements is provided at the time of admission to the University.

University Scholarships

Full and partial tuition scholarships begin in the fall semester and may be renewed through the senior year, provided that the recipient reapplies by the published deadlines, maintains a B- average or better, completes 12 credits per semester, and continues to demonstrate financial need. All applicants for need-based aid are considered for these awards.

- Sherman Page Allen Memorial Scholarship
- Anderson Family Endowed Scholarship Fund
- Mary J. Anderson Memorial Scholarship Fund
- Byron Andrews Memorial Scholarship Fund
- Dominic F. Antonelli, Jr., and Judith D. Antonelli Family Scholarship
- Ibrahim Aborse Ashia Engineering Scholarship Fund
- Stanley M. Baer Scholarship in Electrical Engineering
- Barker Scholarship Fund
- Callie Barker Endowed Scholarship Fund for Art Education
- Bedi Family Foundation Scholarship Fund
- Gilbert A. Bell Memorial Scholarship Fund
- Sigrid Weeks Benson Scholarship Fund
- David W. Berg Scholarship Fund
- Michael Billiel Student Scholarship Fund
- Gail E. Boggs Engineering Scholarship
- John and Anne Booth Undergraduate Scholarship
- Anne Borde University Scholarship
- Lura Bradfield Endowed Scholarship for Women
- Dirk S. Brady Endowed Scholarship Fund
- Henry Newlon Brawner, Jr., Memorial Scholarship Fund
- Victoria Briggs Scholarship Fund
- Frederick Albert and Alma Hand Britten Scholarship Fund
- Abigail Ann Brown and Henry Kirk White Scholarship Fund
- George R. Brown Scholarship
- Joel T. Broyhill Scholarship Fund for Public Policy Studies
- Frate Bull, Jr., Scholarship Fund
- Eleanor and Michael Burda Scholarship Fund
- Barbara Willmarth Callahan Scholarship Fund
- Cannon Design Scholarship in Engineering and Applied Sciences
- Mary Ellen Caplin Scholarship Fund

- Nelson and Michele Carbonella Engineering Scholarship
- Elsie M. Carper Scholarship Fund
- Emmn K. Cnrr Scholarship Fund
- Henry Harding Carter Scholarship Fund
- Mnria M. Corter Scholarship Fund
- Puul E. Casassa Memorial Scholarship Fund
- Cauffman Scholarship Fund
- Cisneros Scholarship Fund
- A. Jnmos Clark Engineering Scholars
- Clnss of 1958 Sc:olarship for Physics
- Class of 2005 September 11th Memorial Scholarship Fund
- David S. Cohen Scholarship in Business
- Gene R. Cohen Entrepreneurial Scholarship
- Columbian College Endowed Scholarship Fund
- Columbian Women Scholarships
- Cook Family Endowed Scholarship Fund
- Marion, John, and Richard Cunningham Endowed Scholarship Fund
- Davis Scholarship Fund
- Cora and John H. Davis Scholarship Fund
- Shelby Cullom Davis Foundation Fund
- Bertha B. Day Scholarship Fund
- Marvin Dekelboum Scholarship
- Kim and Derek Dewan Endowed Scholarship
- Constance Drane Scholarship Fund
- Eberli Family Endowed Scholarship
- Professor Burton I. Edelson Memorial Scholarship
- James B. Edmunds, Jr., Memorial Scholarship
- Epsilon of Sigma Chi Scholarship Fund at GW
- Henry Parsons Erwin Scholarship Fund
- Gerhard Fairgrieve Endowed Scholarship Fund
- Farnham Scholarship
- Feinsod Scholarship Fund
- Edward M. Felegy Scholarship Endowment in Honor of Stephen Joel Trachtenberg
- Lindsey M. Ferris Memorial PAF Scholarship Fund
- Esther Brigham Fisher Scholarship
- Julius Fleischman Scholarship Fund for Blind or Visually Impaired Students
- R. John and Carolyn Dwmagan Fletcher Fund
- Andrew K. Friedman Endowed Memorial Scholarship Fund
- Sergius Gambal Scholarship Fund
- The George Washington University Faculty and Staff D.C. Scholarship Fund
- The George Washington University Undergraduate Endowed Scholarship Fund
- Gersten Family Scholarship Fund
- Louis B. Giles Memorial Scholarship Fund
- Philip L. Graham Fund Scholarship for Diversity in Journalism
- Gary C. Granoff and Leslie Granoff Scholarship Fund
- Gridiron Foundation Scholarship Fund
- Grosso Family Scholarship
- Violet Davis Grubbs Scholarship Fund
- Isadore and Bertha Gudelsky Family Scholarship Endowment Fund
- Michele Hagans Fund
- Helene and Mark Hankin Scholarship
- Theo Campbell Hartman Memorial Scholarship Fund
- Hatchet Scholarship Fund
- Hazelton Scholarship Fund
- William Randolph Hearst Endowed Scholarship Fund
- Hess-Kaplan Scholarship Fund
- John H. Holmes Native American Scholarship I and II
- Mei Yuen Hoover Scholarship Fund
- Gladys B. Hornbrook Endowed Scholarship
- Frederic R. Houser Scholarship Fund
- June J. Hoyle Scholarship Fund
- Taylor Hubbard Memorial Scholarship
- Madeleine Reines Jacobs Undergraduate Fund in Chemistry
- Robert Jacques Scholarship Fund
- Allen M. Jones Scholarship Fund
- Raymond V. Jones and Katherine P. Jones Scholarship
- Howard Kahn Undergraduate Scholarship Fund
- Karlgaard Scholarship in Computer Science
- Karlgaard Scholarship in Computer Engineering
- Karp Scholarship Fund
- David B. and James L. Karrick, Jr., Scholarship Fund
- Joseph and Helen Kaufmann Scholarship Fund
- Elizabeth Kay Scholarship Fund
- John Kaye Scholarship Fund
- William Charles Keller Scholarship and Loan Fund
- Amos Kendall Scholarship Fund
- Robert Martin Kilgore Scholarship
- Kim Family Endowed Scholarship
- Esther C. and David F. Lawton Memorial Fund
- L. Poe Leggette Scholarship Fund
- Levine-Klein Endowed Scholarship Fund
- Dr. Harold Liebowitz Scholarship Fund
- Thaddeus A. and Mary Jean Lindner Scholarship Fund
- Mr. and Mrs. Clarence A. Lindquist Scholarship Fund
- Calvin D. Linton Endowed Scholarship Fund
- Mary and Daniel Loughran Foundation Scholarship Fund
- Mack Family Endowed Scholarship Fund
- Garnett L. Mack Endowed Scholarship Fund
- Joseph W. March, Jr., Scholarship Fund
- Richard Marks Scholarship
- Richard Marmaro Family Scholarship
- Ruth Marshall Scholarship

- Curtis E. McCalip Scholarship Fund
- Maud E. McPherson Scholarship in English and English Literature
- Malden Family Endowed Scholarship Fund
- Memishian Student Scholarship Fund
- Memorial Scholarship Fund
- Mensh Family Memorial Scholarship Fund
- Connie J. Miller Strategic Opportunity Fund for Civil and Environmental Engineering
- Mintz Scholarship Fund
- Casper F. "Casey" Mohl Mechanical Engineering Memorial Scholarship
- Ruth Monter Endowed Scholarship
- A. Morehouse Scholarship
- E. K. Morris Education Fund
- Marion O. Norby Endowed Scholarship Fund
- William B. Oakley Scholarship Fund
- K. Frederick and Madeline G. Okano Scholarship Fund
- Thomas E. Orr Scholarship Fund
- Henry and Caroline Orth Scholarship Fund
- Thornton Washington Owen International Business Scholarship Fund
- Nicholas G. Paleologos Scholarship Fund
- John Earl Parsons Scholarship
- Tomas A. Pastoriza Scholarship Fund
- Shantilal P. Patel Scholarship Fund
- Lawrence Joy Pearson Scholarship Fund
- Maureen Schafer Peckmon Endowed Scholarship for Women's Soccer and Athletics
- Fred B. and Almo D. Pletcher Scholarship Fund
- The Polden Family Scholarship
- Sterling W. Pope Scholarship Fund
- S. Remey Poltingl:lr Memorial Scholarship Fund
- Levine L. Powell Scholarship Fund
- The Ronald E. Pump Endowed Scholarship Fund
- Henry Whitefield Samson Scholarship Fund
- Schley Family Scholarship for Baseball
- Schneider-Taylor Family Endowed Scholarship Fund
- Scottish Rite of Freemasonry Scholarship Fund
- Cecelia M. Sehrt Scholarship Fund
- Edward Henry and Helen Ludwig Sehrt Scholarship
- Sejong Scholarship Fund
- Niranjana G. Shah Scholarship Fund
- Eugene Corey and Elizabeth PoweJI Nuckols Shaw Scholarship Fund
- Lula M. Shepard Scholarship Fund
- Ira and Adela Shesser Endowment in the Columbian School of Arts and Sciences
- Mildred Shott Scholarship Fund
- Simon Family Scholarship Endowment
- Siochain Foundation Endowed Scholarship
- Margaret Lucille Snoddy Scholarship Fund
- South Asian Society Scholarship Fund
- Louisa J. Spencer Scholarship Fund
- George Steiner Music Scholarship Fund
- Mary Lowell Stone Scholarship Fund
- Marc M. Sussman and Richard A. Morris Endowed Scholarship Fund
- Charles Clinton Swisher Scholarship Fund
- Mary Helen Taliaferro Endowed Scholarship Fund
- Tanner Endowed Scholarship Fund
- Tauber Holocaust Memorial Scholarship for Public Health
- Lydia W. Thomas Scholarship Endowment
- Trachtenberg Endowed Scholarship Fund
- Tucker Scholarship Fund
- University Players Scholarship Fund
- University Scholarship Fund
- Unrestricted Undergraduate Scholarship Fund
- Mary and Warren Vincent Scholarship Fund
- Darrel Waldroupe Memorial Scholarship Fund
- Christine L. Waldvogel Memorial Scholarship Endowment
- William Walker Scholarship Fund
- Wanda Webb Scholarship Fund
- Elissa Wernick and James S. Richman Scholarship Fund
- Lucy Kim Whitcombe Memorial Endowed Scholarship Fund
- White Scholarship Fund
- Daniela Wiggins Scholarship
- John Withington Scholarship Fund
- William G. Woodford Scholarship Fund
- Granville Witt Woodson Scholarship Fund
- Anna Wunderman Fund
- Virginia H. Yates Endowed Fund
- Christopher and Constance Young Scholarship in Accountancy
- Barbara Jackman Zuckert Scholarship Fund
- Joel D. Zychick Endowed Scholarship Fund in Business

Loan Funds

GW participates in the Federal Direct Stafford Loans and the Federal Direct Parent Loan for Undergraduate Students. The U.S. Department of Education acts as the lender and guarantor. Servicing during the repayment period will be assigned by the Department to one of its contracted servicers.

Federal Direct Stafford Loans

This is a fixed-rate loan for student borrowers, with no credit check involved, as the federal government provides an automatic guaranty. Annual loan limits are:

Dependent undergraduates (most students under the age of 24):

- \$5,500 as freshmen (including up to \$3,500 subsidized);
- \$6,500 as sophomores (including up to \$4,500 subsidized);
- \$7,500 as juniors and seniors (including up to \$5,500 subsidized).

Independent undergraduates (students age 24 or older) and dependent students whose parents are unable to obtain PLUS Loans:

- \$9,500 as freshmen (including up to \$3,500 subsidized);
- \$10,500 as sophomores (including up to \$4,500 subsidized);
- \$12,500 as juniors and seniors (including up to \$5,500 subsidized).

Interest rates for loans borrowed between July 1, 2013 and June 30, 2014 is 6.41%. For students who receive subsidized Stafford loans as part of their need-based financial aid award, the government pays the interest while they are enrolled in school at least half-time and for six months afterward. Students ineligible, or only partly eligible, for subsidized funds may apply for an unsubsidized Stafford Loan up to the same limits to cover their family contribution. Terms and conditions are the same, except that the student borrower is responsible for all interest that accrues on the unsubsidized loan from the date it is disbursed; deferments are available. Independent students (and students whose parents are denied a PLUS loan) are eligible to borrow additional unsubsidized Stafford funds of \$4,000 as freshmen and sophomores and \$5,000 as juniors and seniors. Interest rates and fees are set on an annual basis by statute. There are also fees associated with these loans. See our web-site or the US Department of Education's web-site (<http://studentaid.ed.gov/types/loans/interest-rates>) for the current interest rates and fees.

Federal Direct Parent Loan for Undergraduate Students (PLUS)

This is a government-sponsored loan that can be used to supplement the student's Federal Direct Stafford Loan or to help with the family contribution. It is a credit-based, fixed-rate loan currently at 6.41% for loans borrowed between July 1, 2013 and June 30, 2014. . Each academic year, parents without an adverse credit history may apply for a Federal Direct PLUS loan up to the cost of education, minus financial aid, for each dependent child attending college at least half-time. Loan repayment begins within 60 days of the last disbursement and the maximum repayment term is ten years.

Origination fees are deducted from loan proceeds prior to disbursement. Families who intend to use loan funds for payment of University charges at time of registration should submit a loan application and all supporting documents to the Office of Student Financial Assistance no later than May 1 for the fall semester, October 1 for the spring semester, or March 1 for summer sessions. See our web-site or the US Department of Education's web-site for the most current interest rates and

fees. See our web-site, noted in the previous paragraph, for specific application procedures.

Federal Perkins Loans

Federal Perkins Loans are loans made to students with "exceptional financial need", as required by Federal statute. Funds for lending are currently limited to available proceeds from collections of past loans made. The interest rate is 5% fixed. There is a ten-year repayment period. There are limits on how much can be borrowed annually as well as maximum lifetime borrowing limits. GW limits Federal Perkins Loans on an annual basis in order to rationalize the limited amount of funds available for lending. See the OSFA web-site for current year awarding parameters.

Alternative Loans

Private lenders provide additional loan options to qualified students. These loans offer attractive interest rates and repayment options. Such loans allow the student to borrow up to 100% of GW's annual undergraduate cost of attendance less any current financial assistance. They typically have variable rates and within rate tiers according to credit worthiness, as well as application fees. Alternative loans, if applied for, must be reported to the Office of Student Financial Assistance.

Other Loan Funds

GW also has several emergency loan funds for short-term needs for degree students. These funds include:

- Jessie B. Martin Loan Fund;
- Jack and Anne Morton Loan Fund;
- Barney Plotnick, M.D., Student Loan Fund;
- University Student Emergency Loan Fund;
- Edmund W. Dreyfuss Loan Fund;
- Peter and Doris Firsht Loan Fund.

These funds are applied for at Colonial Central. In addition, the Inner-City Special Student Assistance Loan Fund is administered by the GW Multicultural Student Services Center.

Required Notices & Disclosures

Availability of State Grant Assistance for Undergraduate Education

Students in undergraduate programs are advised to pursue the potential of state grant assistance to help finance a GW education from the state grant agency in your home state before pursuing loan options. The US Department of Education maintains a list of state grant agencies (http://wdcrobcolp01.ed.gov/Programs/EROD/org_list.cfm?category_cd=SGT) and contact information on their web-site.

The Brookings Institution (<http://www.brookings.edu/research/reports/2012/05/08-grants-chingos-whitehurst>) maintains a database of state grant programs for postsecondary education.

Availability of US Department of Education Loan Publications

Students pursuing student loans are advised to review, download, and retain the US Department of Education's publications on student loans. They are:

- *Your Federal Student Loans: Learn the Basics and Manage Your Debt*
- *Entrance Counseling Guide for Direct Loan Borrowers* (<http://www.direct.ed.gov/pubs/entrncounselguide.pdf>), and
- *Exit Counseling Guide for Direct Loan Borrowers*.

GW does not maintain a preferred lender list for student loans. GW will certify any student loan for which certification is required. Our code of conduct for student loans, as required under the HEA, is available online on the GW policies website (<http://my.gwu.edu/files/policies/CodeofConductFinAid.pdf>) and on the new OSFA HEA Disclosures web-page (<http://financialaid.gwu.edu/policy-student-loan-code-conduct>).

Title IV Eligibility and Drug Convictions

Please be advised that under federal law, a recipient of Title IV student financial assistance who is convicted for possession and/or sale of illegal drugs while enrolled as a student at GW will be ineligible for further Title IV funds for a fixed period of time. For our complete policy on the Impact of Drug Conviction on Title IV eligibility, see the Student Accounts website (<http://studentaccounts.gwu.edu/refunds>).

Role of the National Student Loan Data System (NSLDS)

Data on federal student loans and Federal Pell Grants are reported to the National Student Loan Data System (NSLDS), which is accessible by school personnel and US Department of Education personnel and servicers of federal student loans. Students can access their data on NSLDS from their website (http://www.nsls.ed.gov/nsls_SA).

Return of Title IV Funds Policy

The University is required by the Higher Education Act to recalculate the eligibility for federal Title IV student financial assistance for students who withdraw, drop out, are dismissed, or take a leave of absence, prior to completing 60% of a semester. Title IV funds include: Federal Pell Grants, Federal Supplemental Educational Opportunity Grants (SEOG), Federal Work-Study, Federal Perkins Loans, Federal Direct Stafford Loans, Federal Direct Unsubsidized Stafford Loans, and Federal Direct PLUS Loans. The priority sequence for return of Title IV funds will be as follows:

- Unsubsidized Federal Stafford Loans
- Subsidized Federal Stafford Loans
- Unsubsidized Direct Stafford Loans (other than PLUS Loans)
- Subsidized Direct Stafford Loans
- Federal Perkins Loans
- Federal PLUS Loans
- Direct PLUS Loans
- Federal Pell Grants for which a return of funds is required

- Federal Supplemental Educational Opportunity Grants (FSEOG) for which a return of funds is required
- TEACH Grants for which a return of funds is required; and
- Iraq-Afghanistan Service Grant for which a return is required

For the complete policy statement on Return of Title IV funds, see the Colonial Central web-site. This applies only to federal student aid and is not pertinent to the University's refund policy, as noted in the Fees and Financial Regulations section of the University Bulletin.

Student Employment

The University participates in the Federal Work-Study Program. Inquiries on eligibility should be addressed to the Office of Student Financial Assistance. The Career Center maintains a registry of both full-time and part-time positions available in the DC metro area, and handles work-study job placement.

International Students

GW's International Services Office (<http://internationalservices.gwu.edu>) helps international students obtain visas and complete immigration processing so they can take full advantage of educational opportunities as soon as they arrive in the United States, including relevant work experiences during and after their studies. The International Services Office also provides orientation and advises about activities and programs that enrich learning, including English conversation groups and workshops on topics affecting study and work while in the United States.

International students are eligible to receive merit scholarship consideration from the Admissions office.

Check with your host country to see if they offer state-sponsored student loans for study in the USA. Private education loans for international students are usually only available with a credit-worthy US co-signer.

The Office of Student Financial Assistance uses Cost of Attendance budgets for the processing of student financial assistance. The budget ranges for undergraduate students is \$56,418 to \$62,796. Details are available on the Office of Student Financial Assistance website (<http://financialaid.gwu.edu>).

Military Education Financing

Veterans Education Benefits

The Office of Military and Veteran Student Services - The GW Office of Military and Veteran Student Services processes applications for entitlement payments under the various classes of veterans' educational benefits. More information can be found on the Office of Military and Veteran Student Services website (<http://services.military.gwu.edu>).

Tuition Assistance Program

Funds from the various branches of the armed services under the Tuition Assistance program are processed by the

GW Office of Student Accounts. Go to Colonial Central for complete information

GRADUATE

Graduate Financial Aid

GW offers a program of financial support for graduate students, which includes assistantships, fellowships, traineeships, graduate school scholarships, research appointments, part-time employment, the Federal Work-Study Program, and loans. Several forms of aid not based on financial need are available. In general, consideration for financial aid is restricted to students in good academic standing who meet the minimum grade-point average for particular awards and are not financially encumbered by any other GW office

GW reserves the right to ask for documentation necessary to determine aid eligibility. Documents submitted as part of aid applications become the property of GW and cannot be returned. Such documents are also governed under the Family Educational Rights and Privacy Act, as amended (FERPA). Federal regulations require GW to report suspected cases of fraud or misrepresentation to the appropriate federal, state, and local authorities.

Gift aid (scholarships, grants, fellowships, assistantships, tuition awards, etc.) is taxable to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies or is dedicated to other costs, such as room and board. Federal grants may be taxable if, together with other gift assistance, they exceed the allowable costs.

Disclosures required under federal gainful employment regulations are on the home page of each academic certificate program that has been deemed eligible for Title IV student financial assistance and therefore subject to the Title IV gainful employment regulations. For further information, contact the academic department or school that offers the certificate program. Continued Title IV eligibility for such programs will be assessed on an annual basis.

Information in this section is accurate at the time this Bulletin is posted online. The Board of Trustees reserves the right to change student financial assistance policies as it deems necessary. Complete student financial assistance information and disclosures are available on OSFA web-pages. Future changes in federal regulations or institutional policies may alter application requirements, program guidelines, for federal, state and institutional student financial assistance programs

Application and correspondence concerning assistantships, fellowships, traineeships, or graduate scholarships should be sent directly to the GW school or college. Unless otherwise specified, application and supporting credentials should be submitted no later than the February 1 prior to the academic year for which the award is made. Application for admission to graduate study is a prerequisite for consideration.

Disclosures required under federal gainful employment regulations are on the home page of each academic certificate program that has been deemed eligible for Title IV student financial assistance and therefore subject to the Title IV gainful employment regulations. For further information, contact the academic department or school that offers the certificate program. Continued Title IV eligibility for such programs will be assessed on an annual basis.

Information in this section is accurate at the time this Bulletin is prepared for press. Future changes in federal regulations or institutional policies may alter the application requirements or program guidelines.

Office of Graduate Student Assistantships and Fellowships

The Office of Graduate Student Assistantships and Fellowships provides information on awards that may be used in support of graduate study. These awards are generally sponsored by foundations, professional and learned societies, industries, and other organizations.

Services are provided to entering and enrolled graduate students. Detailed information is available on the Office of Graduate Student Assistantships and Fellowships website (<http://www.gwu.edu/~fellows>).

Assistantships

Graduate Teaching Assistantships

Available to students in master's and doctoral programs in most GW academic departments. A graduate teaching assistant receives financial compensation for a designated unit of service to the assistant's major department of instruction. All new graduate teaching assistants must attend an orientation program and enroll in an on-line course.

International students applying for graduate teaching assistantships must have minimum TOEFL scores of 600 (paper-based) or 100 (Internet-based) or an overall band score of 7.0 on the academic IELTS with no individual band score below 6.0. International students applying from outside GW may be appointed to graduate teaching assistantships but must successfully complete an orientation and evaluation program held prior to registration. Those found to have difficulties with English will be required to enroll in specified courses in English for Academic Purposes and/or will be referred to the Speech and Hearing Center's speech enhancement program; such students will be assigned nonteaching duties in place of classroom instruction. They will be re-evaluated each semester. If not designated as qualified to give classroom instruction by the end of one academic year, the teaching assistantship will not be renewed.

Graduate students who are presently enrolled at GW and have been proposed as candidates for graduate teaching assistantships by their departments must pass the Test of English for Academic Purposes at the levels indicated above and will be required to complete successfully an oral interview

and the orientation and evaluation program before they will be considered for graduate teaching assistantships.

Graduate Research Assistantships

Available to students in master's and doctoral programs in some GW academic departments. A graduate research assistant receives compensation for research assistance provided to a professor.

Other Research Assistant Positions-May be available in departments with faculty who are participating in sponsored research. Students are advised to check with the department concerned.

Resident Assistantships

Available to graduate students in any field of study who are interested in working in University residence halls. Specific duties vary with the position, but basically consist of counseling, advising student groups, and administration. Remuneration includes salary and a furnished room for the academic year. All positions are part time, and staff members are required to enroll as full-time students in degree programs. Further information may be obtained from GW Housing Programs.

Fellowships, Scholarships, and Related programs

University Fellowships

Available to graduate students in master's and doctoral programs in most GW academic departments. Fellowships are based on scholarship and each fellow may receive a stipend and/or tuition allowance.

Other Fellowships, Scholarships, and Related Programs

- Achievement Rewards for College Scientists Scholarships
- Angeline Anderson Scholarship Fund
- Bank of America Fellowship
- Robert R. Banville Scholarship Fund
- Sylven Said Beck Endowment Fund for Elementary Education
- Bell Atlantic Endowment Fellowships in Physics and Chemistry
- Florence Bichan/Scottish Rite Scholarships
- Mary Darnell Blaney Fellowship in International Relations
- Winfield Scott Blaney Fellowship in International Relations
- John and Claudia Boswell Scholarship Fund
- Hortence Mae Boutell Scholarship in Fine Arts
- Marcella Brenner Museum Education Scholarship Fund
- David and Anne Elizon Brown Scholarship
- Letitia Woods Brown Fellowship in American Studies
- Joel T. Broyhill Scholarship
- Doris and Sam Buchhalter Scholarship
- Robert D. Campbell Endowment Fellowships in Geography
- Career Development Fellowships
- Oliver T. Carr, Jr., Fellowships
- Carruthers Family M.B.A. Scholarship
- Center for Washington Area Studies Fellowship
- James Edward Miller Chapman Educational Foundation Scholarship
- Chemistry Alumni Fellowship
- Children's National Medical Center Fellowships in Biomedical Sciences
- Daewoo Corporation Scholarships
- Daewoo Vietnamese Scholarship
- Daughters of the American Revolution (DAR) Endowment Fellowships
- Maria Davis European Studies Fellowships
- Vincent J. DeAngelis Scholarship Fund
- Deixler/Swain Graduate Scholarship in History
- Dockery Endowment Scholarship
- Eaton Scholarship
- Eaves-Carden Graduate Scholarship
- Engineering Alumni Association Fellowship
- Evans Scholarship Fund in Art
- Evans Scholarship Fund in Theatre and Dance
- Rosetta and Sadie Feldman Endowment Fellowship
- Fischer Family Fund
- Joseph Fleischman Fellowship in Real Estate Studies
- Julius Fleischman Scholarship in Tourism and Hospitality Management
- Rockwood H. Foster Memorial Scholarship Fund
- James Harold Fox Scholarship Fund
- Philip Friedlander, Jr., Scholarship in Entrepreneurship and Small Business Studies
- Mary Hatwood Futrell Scholarship Fund
- Jack Gerard Endowment Fellowship
- Global Leaders Fellowships
- Leo and Lillian Goodwin Endowment Scholarship
- Graduate Engineering Honors Fellowship Program
- Mildred Green Memorial Endowment Fund
- Walter Green Award Fund
- Griffith Family Scholarship Fund
- GSPM Alumni Scholarship Fund
- GSPM Faculty Scholarship Fund
- Anna Spieker Hampel Scholarship
- Corey Hansen Scholarship Fund
- Harpster-Barbae Scholarship
- Evelyn Barstow Harrison Scholarship in Public Administration
- Elizabeth Earle Heckmann Graduate Scholarship
- Norris and Betty Hekimian Engineering Endowment
- Herbst Family Graduate Fund
- Thelma Hunt Graduate Fellowships in Psychology
- Hyundai Scholarship Fund
- Iran Research Fellowships
- Douglas L. Jones Endowed Graduate Fellowship in Mechanical Engineering

- Kylen and Heide Jones-Huffman Fund
- Marvin L. Kay Fellowship in Finance
- Kayser Fund Endowment in History
- Rita H. Keller Scholarship Fund
- Kellogg Graduate Scholarship
- John Whitefield Kendrick Graduate Fellowship in Economics
- Isabella Osborn King Research Fellowships in Biological Sciences
- Larry King Graduate Scholarship in Media and Public Affairs
- Andrew John Knox Scholarship
- Wolfgang and Astrid Kraus Graduate Scholarships
- Lambert Graduate Stipend in Arts and Sciences
- Laurence F. Lane Graduate Scholarship in Political Management
- Levitan Endowment Fellowships
- Myron L. Loe Graduate Student Scholarship
- Loughran Foundation Fellowships
- Loughran Oxford Fellowships
- Morris Louis Fellowship in Painting
- W. Stanley Machen Graduate Fellowship in Civil Engineering
- Michele Manatt Endowed Scholarship
- Willard Marriott Foundation Graduate Scholarships
- George McCandlish Fellowship in American Literature
- McConnell Endowment in Chemistry
- Dorothy A. Moore Graduate Scholarship Endowment for International Education
- Dorothy and Charles Moore Fellowship in International Development Studies
- James N. Mosel Scholarship Fund
- National Council for Education and Human Development Endowed Scholarship Fund
- National Institutes of Health Fellowships in the Biomedical Sciences
- Wendy Anne Ochsman Endowment Scholarships
- Phi Delta Gamma Scholarships
- Raymond L. Pickholtz Graduate Scholarship
- Policy Studies Graduate Fellowships
- Poncelet Scholarships
- Presidential Merit Fellowships
- Public Administration Faculty-Alumni Scholarship
- Kelly J. Purcell Memorial Credit Union Scholarship in Political Management
- Joan Roddy Regnell Fellowships in Speech and Hearing Science
- Shirley H. and Robert L. Richards Scholarship Fund
- Thomas Bradford Sanders Fellowships
- Schwoerer Graduate Scholarship
- Scottish Rite Graduate Endowment Fellowships
- Bourdon F. Scribner Graduate Student Scholarship in Chemistry
- SEAS 175th Anniversary Scholarship
- Selective Excellence Endowment Fellowships
- J.B. and Maurice C. Shapiro Fellowships in International Affairs
- Sickler Family Endowment Scholarship
- Speech-Language Pathology Endowment Fellowships
- Phillip-Temofel Sprawcew Scholarship
- Ronald B. Thompson Scholarship
- Toccin Endowment Fellowship
- Timothy W. Tong Fellowship
- Trachtenberg-Wang Teaching Fellowship
- Turner Non-Profit Leadership Development Scholarship
- General John W. Vessey Endowment Fellowships
- Vest Graduate Scholarship
- Videtto Family Endowment Scholarship
- Henrik W. Vietor Graduate International Fellowships
- Jack C. Voelpel Memorial Fund
- Louis P. Wagman Endowment Scholarship in Engineering
- Richard David Walk Endowment Scholarships in Psychology
- William Warren Endowment fund for Fellowships in the Columbian College of Arts and Sciences
- Washington Gas and Light Scholarship
- Helen Waters Endowed Scholarship
- William Warren Endowment Fund for Fellowships
- Ann Gordon Webster Endowment for Anthropology
- Ronald Barbour Weintraub Research Fellowships in Biological Sciences
- Ruth Ann Parker Wells Scholarship
- Ruth Ann Parker Wells and David Leonard Wells Endowment Scholarship Fund
- Katherine J. Williams Endowment Scholarships in Art Therapy
- Wolcott Foundation Scholarships
- Helen and Sergius Yakobson Graduate Scholarship

Loan Funds

Federal Direct Stafford Loans

Graduate students enrolled at least half time may apply for Federal Direct Stafford Loan funds per academic year. Unsubsidized loans require the student borrower to pay all interest that accrues on loan during the in-school period. Deferments are available. Students must file the FAFSA to determine their eligibility.

The US Department of Education's web-pages (<http://studentaid.ed.gov>) contain complete details on loan limits, interest rates, fees, and application procedures. Federal student loan interest rates and fees are set for the year from July 1- June 30 by statute, and are subject to change per

statutory action. The OSFA web-pages additionally details specific GW application requirements.

Federal Direct Graduate PLUS

Graduate and professional students are allowed to apply for funds under the Federal Direct PLUS Loan Program. Eligible students may borrow up to the full cost of attendance, including tuition, fees, books, living and transportation expenses, less any financial assistance received (which includes all student loans). The student must first apply for the Federal Direct Stafford Loan and the amount of the Stafford Loan eligibility must be included in the calculation to determine the amount of the Graduate PLUS loan.

The US Department of Education's web-pages (<http://studentaid.ed.gov>) contain complete details on loan limits, interest rates, fees, and application procedures. Federal student loan interest rates and fees are set for the year from July 1- June 30 by statute, and are subject to change per statutory action. The OSFA web-pages additionally details specific GW application requirements.

Alternative Loans

Private lenders provide additional loan options to qualified students. These loans offer attractive interest rates and repayment options. Such loans allow the student to borrow up to 100% of GW's annual undergraduate cost of attendance less any current financial assistance. They typically have variable rates, rates within rate tiers according to credit worthiness, and application fees. Alternative loans, if applied for, must be reported to the Office of Student Financial Assistance to be considered as a resource against Federal student aid eligibility. We strongly urge that federal student loans be considered before alternative loans due to generally more favourable interest rates, fees, and repayment options.

Other Loan Funds

GW also has several emergency loan funds for short-term needs for degree students. These funds include:

- Jessie B. Martin Loan Fund;
- Jack and Anne Morton Loan Fund;
- Barney Plotnick, M.D., Student Loan Fund;
- University Student Emergency Loan Fund;
- Edmund W. Dreyfuss Loan Fund;
- Peter and Doris Firsht Loan Fund.

These funds are applied for at Colonial Central. In addition, the Inner-City Special Student Assistance Loan Fund is administered by the GW Multicultural Student Services Center.

Student Employment

The University participates in the Federal Work- Study Program. Inquiries on eligibility should be addressed to the Office of Student Financial Assistance. The Career Center maintains a registry of both full-time and part-time positions available in the DC metro area, and handles work-study job placement.

Required Policies & Disclosures

Drug Conviction Impact on Title IV Eligibility

Please be advised that under federal law, a recipient of Title IV student financial assistance who is convicted for possession and/or sale of illegal drugs while enrolled as a student at GW, will be ineligible for further Title IV funds for a fixed period of time. For our complete policy on the Impact of Drug Conviction on Title IV eligibility, see the Student Accounts website (<http://studentaccounts.gwu.edu/refunds>).

Role and Availability of the National Student Loan Data System

Data on federal student loans and Federal Pell Grants are reported to the National Student Loan Data System (NSLDS), which is accessible by school personnel and US Department of Education personnel and servicers of federal student loans. Students can access their data on NSLDS from their website (http://www.nsls.ed.gov/nsls_SA).

Satisfactory Academic Progress for Student Financial Assistance

Maintaining satisfactory academic progress is one of many requirements mandated under federal statutory and regulatory requirements for federal student aid programs, as well as state financial assistance programs, and for many forms of institutional financial assistance offered by GW. In order to remain eligible for federal student financial assistance at GW, federal regulation requires that students must maintain both a qualitative and quantitative standard for satisfactory academic progress. These standards measure a student's progress in three different aspects:

- Semester and cumulative grade point average
- Credit hour completion rate, and
- The maximum time frame allowable for completion of an academic program as a recipient of Federal student financial assistance.

This satisfactory academic progress policy is specific to maintaining eligibility for federal student financial assistance programs, and does not replace academic and departmental policies pertaining to academic standing and/or degree progression. Federal regulations require a specified level of academic achievement and the completion of a set number of credits within a given time frame.

The satisfactory academic progress policy for undergraduate students is that a student must maintain at least a 2.0 grade point average and pass at least 66.7% of all courses attempted. The complete satisfactory academic progress policy statement is available on the OSFA web-site.

Return of Title IV Funds Policy

The University is required by the Higher Education Act to recalculate the eligibility for federal Title IV student financial assistance for students who withdraw, drop out, are dismissed, or take a leave of absence, prior to completing 60% of a semester. Title IV funds include: Federal Pell Grants, Federal Supplemental Educational Opportunity Grants (SEOG), Federal

Work-Study, Federal Perkins Loans, Federal Direct Stafford Loans, Federal Direct Unsubsidized Stafford Loans, and Federal Direct PLUS Loans. The mandated sequence for Return of Title IV funds is as follows:

The priority sequence for return of Title IV funds will be as follows:

- Unsubsidized Federal Stafford Loans
- Subsidized Federal Stafford Loans
- Unsubsidized Direct Stafford Loans (other than PLUS Loans)
- Subsidized Direct Stafford Loans
- Federal Perkins Loans
- Federal PLUS Loans
- Direct PLUS Loans
- Federal Pell Grants for which a return of funds is required
- Academic Competitiveness Grants for which a return of funds is required
- National SMART Grants for which a return of funds is required
- Federal Supplemental Educational Opportunity Grants (FSEOG) for which a return of funds is required
- TEACH Grants for which a return of funds is required; and
- Iraq-Afghanistan Service Grant for which a return is required.

For the complete policy statement on Return of Title IV funds, see the Colonial Central web-site. This applies only to federal student aid and is not pertinent to the University's refund policy, as noted in the Fees and Financial Regulations section of the University Bulletin.

Title IV Credit Balances

If the crediting of Title IV funds exceeds your University charges, the University is required to provide a refund within required time frames. You also have the right to have funds held on your account. For the complete Title IV cash management authorization policy, see the Colonial Central website for the Title IV cash management authorization forms.

International Students

GW's International Services Office (<http://internationalservices.gwu.edu>) helps international students obtain visas and complete immigration processing so they can take full advantage of educational opportunities as soon as they arrive in the United States, including relevant work experiences during and after their studies. The International Services Office also provides orientation and advises about activities and programs that enrich learning, including English conversation groups and workshops on topics affecting study and work while in the United States.

Check with your host country to see if they offer state-sponsored student loans for study in the USA. Private education loans for international students are usually only available with a credit-worthy US co-signer.

At the graduate level, cost of attendance budgets created by the Office of Student Financial Assistance for student financial assistance processing are constricted based on the specific program's tuition and fees. Details are available on the Office of Student Financial Assistance website (<http://financialaid.gwu.edu>).

Military Education Financing

Veterans Education Benefits

The GW Office of Military and Veteran Student processes applications for entitlement payments under the various classes of veterans' educational benefits. More information can be found on the Office of Military and Veteran Student Services website (<http://services.military.gwu.edu>).

Tuition Assistance Program

Funds from the various branches of the armed services under the Tuition Assistance program are processed by the GW Office of Student Accounts. Go to Colonial Central for complete information.

INTERDISCIPLINARY AND SPECIAL UNDERGRADUATE PROGRAMS

While GW offers many interdisciplinary programs within and across its schools and departments, those listed here are independent of other GW affiliation.

- University Honors Program (p. 40)
- Naval Science (p. 39)
- Sustainability (p. 40)
- Women's Leadership Program (p. 41)

NAVAL SCIENCE

Naval Reserve Officers Training Corps Program

The Naval Reserve Officers Training Corps (NROTC) offers young men and women the opportunity to qualify for a full scholarship and a commission in the Navy or Marine Corps. NROTC midshipmen are required to complete the naval science courses and attend weekly professional seminars. During the summer, NROTC midshipmen participate in active duty at sea or shore-based training cruises for approximately four weeks. Upon receiving the baccalaureate and completing the NROTC program, qualified midshipmen are commissioned as ensigns in the U.S. Navy or second lieutenants in the Marine Corps. Commissioned naval officers go on to training in various warfare specialties and serve as surface or submarine officers, naval aviators, or SEALs. Marine Corps officers attend basic school in Quantico, Virginia, and serve in fields such as infantry, artillery, and aviation. Staff positions (intelligence, law, medicine) are not normally offered through NROTC. Students may join the NROTC through any one of the following programs.

Four-Year Scholarship Program—Students enter the NROTC Four-Year Scholarship Program through national competition and are appointed midshipmen in the Naval Reserve. While enrolled, a four-year-scholarship student receives government-provided tuition, fees, \$350 per semester for books, uniforms, and an allowance of up to \$400 per month. Upon graduation, students are commissioned with a minimum four-year active duty service obligation. Scholarship Program students must include in their degree program courses in English, calculus, cultural awareness, physics, national security policy, and naval science and participate in three summer training periods of approximately four weeks each.

Two-Year Scholarship Program—Selection for this program is made through national competition, based on the student's academic record, physical qualifications, and an interview. Application should be made by the middle of the fall semester of the student's sophomore year. Selected applicants attend six weeks of instruction at the Naval Science Institute (NSI) at Newport, Rhode Island, during the summer before their third academic year. At NSI, students take courses in naval science,

physical fitness, and drill, similar to those required of four-year NROTC students during their freshman and sophomore years. Successful completion of the NSI program qualifies the two-year applicants for appointment as midshipmen in the Naval Reserve and enrollment in the NROTC Scholarship Program. Upon acceptance of this appointment, students receive all the benefits and assume all the obligations of midshipmen in the Four-Year Scholarship Program.

Entering freshmen and transfer students who are awarded NROTC scholarships and plan to live on campus may also be eligible for GW Residence Hall Awards from the University. NROTC scholars with prior experience in the Navy are eligible for awards covering the nominal charges for on-campus housing and meals. NROTC scholars who are new to the Navy and are majoring in mathematics, chemistry, physics, or a program in the School of Engineering and Applied Science may receive up to \$4,000 to be applied toward the costs of on-campus housing and meals. Further information on these awards is available from the University Office of Admissions.

Four-Year College Program—Students are enrolled in a non-scholarship Four-Year College Program upon acceptance by the Department of Naval Science. Uniforms are provided, and during their junior and senior years, students receive up to \$400 per month. Students must include in their degree program courses in college algebra, science, and naval science and must attend the four-week at-sea training period between junior and senior year. Upon commissioning, College Program students serve a minimum of four years' active duty. Midshipmen who complete one term as College Program students, have a satisfactory academic record, and are physically qualified may compete for a scholarship awarded by the Chief of Naval Education and Training. If awarded, the scholarship will be for the remainder of the student's undergraduate enrollment, up to a maximum of three and a half years; service requirements and benefits are the same as for the scholarship programs.

Two-Year College Program—Application should be made by the middle of the fall semester of the student's second year. Selections are made through the Chief of Naval Education and Training, based on the student's academic record, physical qualifications, and an interview. Those students selected will attend the NSI and upon successful completion may enroll in the program. The benefits and obligations are the same as for the Four-Year College Program.

Requirements for all candidates—Qualifications for acceptable candidates for the Scholarship Program or the College Program include U.S. citizenship, fulfillment of physical requirements, and willingness to participate in required summer training periods and to accept a commission in the U.S. Navy or Marine Corps when offered.

Enrollment in NROTC is not a requirement for taking naval science courses. Any student enrolled at George Washington

University may take naval science courses with the approval of the Professor of Naval Science.

SUSTAINABILITY

The GW sustainability minor is available to all undergraduates across the University. The 18-credit minor includes courses in three tracks: Environment/Earth Systems; Society and Sustainability; and Policy, Organization, and Leadership. Each track includes a choice of courses from several GW schools; approved topics courses and courses taken through study abroad can be part of the student’s program. Requirements include experiential learning and at least one course taken outside the student’s home school and discipline. Specific requirements and lists of designated courses that pertain to the sustainability program can be found at sustain.gwu.edu/.

REQUIREMENTS

The 18-credit minor in sustainability includes a number of innovative features. Unlike other Universities where environmental studies or environmental management may be housed in a single school, the GW vision seeks to be genuinely trans-disciplinary. To encourage the participation of all schools and faculty, and to allow students to experience inter-disciplinary methods and approaches to sustainability, students will be required to take a minimum of 6 credits (including the inter-disciplinary introductory course) outside their home school and discipline.

Additionally, 3 credits of experiential learning will be required as a culminating experience for juniors or seniors. In order to give students a holistic view of sustainability, students are required to take at least 3 credits in each of the three tracks. Green Leaf courses (<https://sustainability.gwu.edu/featured-green-leaf-courses-0>) (courses that focus on or incorporate issues of sustainability in their syllabi) are automatically eligible to be counted for the minor, as long as they fit the structure.

Foundation course:

SUST 1001	Introduction to Sustainability
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Tracks (at least 3 credits from each track):

Track A: Environmental/Earth Systems
Courses in science or engineering that cover climate, energy, water or ecology
Track B: Society and Sustainability
Courses in public health, food, social equity, urban studies, international development or economics
Track C: Policy, Organization and Leadership
Courses in methods, policy, law, business, and organizational sciences

Culminating experience:

Experiential learning opportunity including sustainability-related field work, directed research, independent study, internships, community service, service learning courses, etc.

SUST 1001 and permission of the program director are prerequisite to SUST 3095 through SUST 3098

SUST 3095	Sustainability Fieldwork
SUST 3096	Directed Research in SUST
SUST 3097	Internship in SUST
SUST 3098	Community Service in SUST

Note: Students must get approval from academic advisor to arrange the culminating experience and to register for SUST 3097 and SUST 3098. For each of these courses there is an expectation of 40 hours of internship or service over the course of the semester.

A list of courses that fulfill each track can be found in the Undergraduate Minor in Sustainability Student Guide (https://sustainability.gwu.edu/sites/sustainability.gwu.edu/files/downloads/STUDENT%20GUIDE%20Undergraduate%20Sustainability%20Minor_0.pdf).

UNIVERSITY HONORS PROGRAM

The University Honors Program (<http://www.gwu.edu/~uhpwww/programinfo.cfm>) helps students hone their analytical and expressive powers, deepen their understanding of complex issues and questions, and broaden their perspectives. Built upon an interdisciplinary honors experience, the program is fully integrated into, synergistic with, and reinforcing of the highest academic aspirations of university schools and departments.

- Small seminar-style classes, capped at 15 or 20 students, provide an opportunity to probe a variety of evolving issues and eternal questions.
- The Honors community is strengthened and sustained by a shared academic experience and enhanced by its relatively small size of approximately 500 students. The program offers first- and second-year Honors students the option of living in an Honors residential community.
- Generally in the first two years of the program, students enroll in a series of unique courses that address questions and issues both cross-cultural and cross-disciplinary, drawing from the humanities, natural sciences, and social sciences. In their final year, students participate in a senior year Honors capstone experience that provides an opportunity to apply and reflect on what they have learned as undergraduates.
- The Honors experience is enriched by distinctive co-curricular programming, including off-campus activities with professors and discussions in the program’s Club Room. Recent events include student-faculty dinners, a hike, visits

to local museums, day trips throughout the region, theater performances, film screenings, guest speakers and debates, career information sessions, and a summer study abroad trip to China.

- The small, discussion-driven format of Honors courses creates a collaborative environment and strengthens relationships between students and faculty.
- Designated Honors academic advisors assist students with academic, career, and personal planning.
- Honors program members have early course registration privileges during their second, third, and fourth semesters at GW.
- Membership in the Honors program is indicated on a student's transcript.

REQUIREMENTS

The University Honors Program (<http://www.gwu.edu/~uhpwww>) offers exceptional entering students the opportunity to engage in a distinctive, participatory program of study designed to prepare them—whatever their gifts and interests might be—to meet the complex challenges of the 21st century. The program invites students to develop a humane perspective on the world. It sustains a community where students and faculty learn from each other, inspired by academic challenge, hard questions, and a desire to make a difference. The program serves approximately 500 selected students, or five percent of GW's undergraduate student body. Incoming students may apply to the Honors Program at the time they apply to the University; a small group of rising sophomores may also apply.

The program is characterized by small, seminar-style classes with enrollments capped at 15–20 students; faculty who serve as mentors, models, and guides in the learning process; classroom approaches that call upon students to initiate inquiry, work collaboratively, and drive the exploration and learning process; interdisciplinary tools and modes of inquiry; and global or cross-cultural perspectives and course content.

In their first year, along with other courses, Honors Program students take HONR 1015 Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought, HONR 1016 Honors Proseminar: Origins and Evolution of Modern Thought, and HONR 1033 Honors Proseminar: Scientific Reasoning and Discovery—HONR 1034 Honors Proseminar: Scientific Reasoning and Discovery; in the second, third, and fourth years, they take HONR 2047 Honors Proseminar: Social and Behavioral Sciences—HONR 2048 Honors Proseminar: Social and Behavioral Sciences and HONR 2053 Honors Proseminar: Arts and Humanities—HONR 2054 Honors Proseminar: Arts and Humanities and pursue course work in their majors, including special or departmental honors and/or independent or mentored research. All Honors students participate in the capstone course, HONR 4199 Honors Capstone Experience, and complete a departmental or Honors senior thesis or project. The Honors proseminars meet certain general

curriculum and elective requirements of the respective undergraduate schools. HONR 1015 Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought is the required University Writing course for Honors students.

In order to remain in good standing, Honors Program students must enroll in at least 12 credit hours each semester and, except for the first year, maintain a cumulative GPA of 3.4 or higher. First-year students must achieve a cumulative GPA of at least 3.0. Successful participation in the program is recognized and recorded on a student's official transcript.

FACULTY

Executive Director M. Frawley

Deputy Director I. Creppell

Assistant Professors W. Winstead, R. Shepherd, E. Aviv, B. Kung, M. Ralkowski, T. Christov, L. Hammond

University Honors Advisory Committee R. Heller (Chair), H. Dobel, C. Dowd, J. Green-Lewis, R. Katz, D. Malone-France, B. Narahari, W. Reich, K. Roddis, S. Singh, T. Zawidzki, A. Zimmerman

WOMEN'S LEADERSHIP PROGRAM

The Women's Leadership Program (WLP) (<http://wlp.gwu.edu>) is a selective, year-long, living and learning program for freshmen women of any school at the GW. Offered at the Mount Vernon Campus, WLP commemorates and preserves the vision of the founder of Mount Vernon College and Seminary, Elizabeth J. Somers. WLP students have the benefit of small classes, close contact with faculty and women in leadership roles, and strong community ties within the Program.

The dynamic curriculum emphasizes exploration and development of women's leadership through academic courses and weekly symposia. WLP symposia offer special lectures, workshops and experiences that draw on the unique resources of Washington, DC, to bring students together with women of achievement and leadership from many professional fields.

FACULTY

Director: Rachelle S. Heller, Associate Provost for Mount Vernon Campus

THE SCHOOLS

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

Dean B. Vinson III

Executive Associate Dean T.A. Murphy

Associate Deans C.H. Sterling, D.H. Ullman

Since its founding in 1821, Columbian College, the original college of liberal arts and sciences of The George Washington University, has been the cornerstone of the campus community. The University awarded its first Doctor of Philosophy degree in 1888, one of the first institutions in the United States to do so. Columbian College of Arts and Sciences today houses all undergraduate and graduate programs in the arts and sciences, offering bachelor's, master's, and doctoral degrees and graduate certificates.

The rich and diverse arts and sciences curriculum is designed to strengthen the student's ability to analyze the social, cultural, and physical environment and to communicate findings in an articulate fashion. These purposes are accomplished by means of the study of various disciplines within the humanities, the social sciences, and the mathematical and natural sciences.

Students may elect one of more than 50 departmental or interdisciplinary majors; they may also elect double majors or individualized degree programs. The College offers its undergraduates opportunities for pre-professional education in many fields and for internships in a stimulating urban environment. Graduate students are offered more than 40 master's programs, 20 doctoral programs, and 15 certificate programs.

REGULATIONS

- Undergraduate Programs (p. 43)
- Graduate Programs (p. 46)

Undergraduate Programs

Columbian College offers undergraduate programs leading to the degrees of Bachelor of Arts, Bachelor of Science, and Bachelor of Fine Arts. In cooperation with the School of Medicine and Health Sciences, a seven-year integrated Bachelor of Arts/Doctor of Medicine is offered.

One hundred twenty hours of academic course work must be passed with a cumulative grade-point average of at least 2.0. Note that some courses outside Columbian College (notably lifestyle, sport, and physical activity courses) do not count toward the 120-credit requirement. General education, major, and other requirements described below must be met.

Each student must declare a major during the sophomore year. A student must declare a major not later than the registration period during the fourth full-time semester or the semester following completion of 45 credit hours, whichever comes first. A student may change the major with the consent of the dean

and of the department or committee concerned; the student must meet the requirements for the new major in effect at the time the change is approved. At least 60 hours of course work must be taken outside the major-field department or major program (this does not apply to the Bachelor of Fine Arts curriculum).

General Education

The general education curriculum of Columbian College (<https://advising.columbian.gwu.edu/g-pac>) engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that meaningfully enhance their analytical skills, that develop communication competencies, and that invite them to participate as responsible citizens, attentive to issues of culture, diversity, and privilege.

Course work for the general education curriculum includes 24 credits of approved analytic courses in quantitative and scientific reasoning and in critical and creative thinking. Students engage diverse viewpoints by incorporating 3 credits of courses into that program that include global or cross-cultural perspectives and 3 credits that include local/civic engagement. Students must also demonstrate written and oral communication skills through 13 credits of approved course work.

The general education curriculum is a "living curriculum" and therefore will change from year to year. Courses added to the curriculum are generally available to students immediately after being approved; some are phased in as deemed appropriate. As such, it is essential that students consult with their professional academic advisors. The basic distribution of the curriculum follows.

Analysis—3 credits in mathematics or statistics (quantitative reasoning); 6 credits in natural and/or physical laboratory sciences (scientific reasoning); 6 credits in social sciences (quantitative, scientific, critical, or creative thinking); 6 credits in humanities (critical or creative thinking); 3 credits in art: visual, performing, critical, or historical practices (critical or creative thinking).

Perspective—3 credits that include a global or cross-cultural perspective; 3 credits that include local/civic engagement

Communication—4 credits in UW 1020 University Writing; 2 Writing in the Disciplines (WID) courses; 3 credits in oral communication. Note: UW 1020 University Writing must be taken before enrolling in the WID courses, and the WID courses must be taken in separate semesters. One of the two WID courses may double count toward the Analysis and/or Perspective course work. The oral communication course may count toward the Analysis and/or Perspective requirements, or it may be met through major requirements.

Courses taken to fulfill any of the general education requirements may also be counted toward the major. With some exceptions made for transfer students, courses fulfilling

these requirements must be completed in residence at the University. A full list of approved courses is maintained by the Office of Undergraduate Studies. (<http://columbian.gwu.edu/undergraduate/advising/gpac>)

Residence

Students must complete at least 60 of the total number of credit hours required for the degree at or through the University and must complete 45 of the final 60 hours in residence in Columbian College, including at least 12 hours of upper-division course work in the major field. (Students who study abroad must complete 45 of their final 75 hours in residence. No more than 30 credit hours may be transferred through study abroad at institutions other than those affiliated with the University.) Nine of the final 15 hours must be completed in residence.

Students wishing to transfer from another division of the University into a degree program in Columbian College must have a cumulative grade-point average of at least 2.0 at the time of their last completed semester before transfer. Courses applicable to the degree taken while registered in any division of the University in the semester or summer sessions immediately prior to admission to degree candidacy in Columbian College are counted as courses in residence.

Advising

Students entering Columbian College are assigned a professional academic advisor (<http://advising.columbian.gwu.edu>) who advises them through graduation. Students partner with advisors to successfully navigate their academic careers through conversations that range from understanding University requirements to exploring possibilities for a major to finding appropriate campus resources that connect students to a community in which they feel comfortable. Students are thereby empowered to take ownership of, and responsibility for, their educational experiences. Specialized advising is provided to students interested in health professions, law, internships, and graduate programs.

Students who have not declared a major must consult with their professional advisor before registering for classes. Once students declare their major, they are also advised by a faculty member in their major department.

Students need to build a support system that ensures academic success. Professors, faculty advisors, professional advisors, tutors, and/or counselors should be part of that support system. [The Writing Center](#) offers walk-in by-appointment assistance. Personal counseling is available through the office of the [Dean of Student Affairs](#), the [Counseling Center](#), [Disability Support Services](#), the [Multicultural Student Services Center](#), and the [International Services Office](#).

Academic Standing

A student who is not on semester warning, probation, or suspension is considered to be in good standing.

The following rules governing semester warning, probation, and suspension are applicable to students enrolled for a full-time program (12 credit hours or more) during the fall or spring semester. Students enrolled for fewer than 12 credits during the fall or spring semester and students enrolled during the summer sessions are subject to probation or suspension on the basis of their cumulative record, with a "semester" considered to be the time interval in which at least 12 credits have accrued.

Semester Warning – A first-semester student whose cumulative grade-point average is less than 2.0 will be issued a warning notice at the end of the semester and will be required to take corrective measures (e.g., limitations of course load to no more than 13 credit hours).

Probation – A student whose cumulative grade-point average is below 2.0 but above 1.0 after attempting a minimum of 24 credit hours is placed on probation. The course load of a student on probation may be no more than 13 credit hours. A student returns to good standing if, after a first or second semester on probation, the cumulative grade-point average is raised to 2.0 or more.

Suspension – The following circumstances constitute grounds for suspension:

1. a cumulative grade-point average below 1.0 after attempting a minimum of 24 credit hours;
2. failure to attain a cumulative grade-point average of 2.0 or more after two successive full-time semesters (or 24 additional credit hours attempted) on probation. Suspension will take effect at the end of the second consecutive semester under 2.0 immediately following two semesters on probation.

Once suspended, students may not register for or complete any courses in any division at The George Washington University. Suspended students may apply for readmission following completion of the term of suspension. Final dates for applying for readmission are the same as those governing undergraduate admission (see Admissions). A suspended student seeking readmission cannot apply for readmission until he or she has been away from the University for at least one semester. To be considered for readmission, a student suspended for academic reason must complete at least 12 credit hours of course work in one semester at a four year degree granting institution and maintain at least a 3.0 grade-point average. A student suspended twice for poor scholarship will not be readmitted.

Timely Progress Toward the Degree – Students who fail to make adequate and timely progress toward the degree, through repeated leaves of absence or repeated failure to

complete an appropriate number of credits per semester, may be dismissed from the University (see Right to Dismiss Students under University Regulations). Students dismissed on these grounds may apply for readmission after supplying sufficient evidence of academic promise.

Dean's List – Students who complete 15 credit hours or more of graded course work in any one semester and attain a semester grade-point average that places them in the highest 20% of CCAS students, with no grade below *B–* and no grade of Incomplete or Unauthorized Withdrawal (*Z*), will be placed on the Dean's List for that semester. A course taken on a Pass/No Pass basis beyond the 15-hour minimum does not affect the student's eligibility for the Dean's List, nor are the credit hours of such a course computed in the above figures. However, a grade of No Pass in a credit-bearing course disqualifies the student from the Dean's List. Once established for a given semester, Dean's List eligibility is not recomputed.

General CCAS Policies

Incompletes – Conditions under which the symbol *I* (Incomplete) may be assigned are described under University Regulations. In Columbian College, the conditions for granting a notation of *I* should be documented by a written contract between the faculty member and the student. These contracts are kept on file in the departmental office. A notation of Incomplete disqualifies the student for inclusion in the Dean's List for the semester in which it is received.

Changing an Incomplete – Incomplete work must be completed as specified in the contract but no later than one calendar year from the last day of the examination period of the semester or summer session in which the symbol *I* was assigned. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the dean for additional time in which to complete the work of the course. Such petitions should be submitted within a year of the assignment of the symbol *I*. When work for the course is completed, the grade earned will be indicated in the form of *I*, followed by the grade. The indication of *I* cannot be removed from the transcript. An Incomplete that is not changed within this period automatically becomes an *IF*. The symbol *I* cannot be changed by reregistering for the course at the University or by taking its equivalent elsewhere.

Pass/No Pass Option – A junior or senior student in Columbian College who is in good standing may, with the approval of the instructor and the dean, take one course a semester for a grade of *P*, Pass, or *NP*, No Pass. No student will be allowed to take more than four pass/no pass courses under this regulation. The student may, however, also receive grades of *P/NP* in courses that are graded *P/NP* only. Courses required for the College's general education requirements or in the student's major or minor field (including those courses required for the major that are offered by other departments) may not be taken on the pass/no pass basis. A transfer student may not choose this option until the second semester of enrollment in the University. Under no circumstances may a student change

from pass/no pass status to graded status, or vice versa, after the end of the eighth week of class.

Preliminary Placement Examinations – All foreign language departments require students to take placement tests to determine the level of proficiency or eligibility for languages studied prior to enrollment at the University. The student is placed in an appropriate course on the basis of these tests. Students may not register for a course other than that determined by the placement test without written permission of the language department. There is no charge to the student for placement tests, and no credit (advanced standing) is awarded for courses waived as a result of these tests. Students who wish to register in MATH 1051 Finite Mathematics for the Social and Management Sciences, MATH 1220 Calculus with Precalculus I&II, MATH 1231 Single-Variable Calculus I, or MATH 1252 Calculus for the Social and Management Sciences are required, prior to registration, to take a placement examination or to have achieved indicated scores on an SAT subject test in mathematics.

Earning Credit by Examination – Assuming there is no duplication of course credit earned, a maximum of 24 credit hours may be assigned for College Board Advanced Placement Tests and International Baccalaureate Higher-Level Examinations. (Credit may be granted for college-level courses taken in an approved secondary school if substantiated by satisfactory performance on these tests.)

Waiving Introductory Courses by Examination – Some departments in Columbian College offer periodic waiver examinations for introductory courses. Such examinations may be attempted at the option of the student; a fee is charged. Specific departments should be consulted for further details. Passing a waiver examination does not entitle a student to any credit toward the degree.

Courses Outside Columbian College – No more than 18 credit hours of courses in schools of the University other than Columbian College may count toward the 120 credits required for graduation with a bachelor's degree in Columbian College. Pursuing a minor may increase the 18-hour limit, with prior permission of the dean of Columbian College. No credit toward the degree is allowed for lifestyle, sport, and physical activity courses. No more than 45 credit hours of courses completed by a student while in nondegree status may be applied toward a degree in Columbian College.

For information on naval science courses visit the Naval Reserve Officers Training Corps (<http://www.gwu.edu/~navyrotc>).

Academic Work Load – To encourage academic performance of high quality, the College limits the student's work load. After the freshman year, a full-time student who is not on probation may take a course load of up to 19 credit hours. The 18th and all subsequent hours require additional tuition charges. A full-time student who, during the immediately preceding semester, has received no grades below *B–* and has earned grades of *A* or *A–* in three courses totaling at least 9 credit hours may take

up to 21 credits. Students may not register for more than 21 credits without approval of the dean.

Earning an Additional Hour of Credit – In exceptional circumstances and with the prior approval of the instructor and the dean, a student may register for and earn an additional hour of credit in upper-division courses within the College by doing a significant amount of extra work as assigned and supervised by the instructor.

Preparation for Medical School

A student who plans to apply to medical school fulfills the general requirements of Columbian College and may select any major in Columbian College. Advice about academic preparation for medical school is provided by the health professions advisors in the Office of Undergraduate Studies (<http://columbian.gwu.edu/undergraduate/advising>). For admission to most medical schools, the student must earn a bachelor's degree that includes the following course work:

- Biology—8 credit hours of introductory biology, including laboratory. Students who receive credit for AP biology must complete 8 credit hours of upper-level biology course work, including laboratory.
- Chemistry—8 credit hours of general inorganic chemistry, including laboratory.
- Organic Chemistry—8 credit hours, including laboratory.
- Biochemistry—3 credit hours.
- Physics—8 credit hours, including laboratory.
- English—6 credit hours in the usual introductory English composition courses or their equivalents (fulfilled by the University Writing Program (<http://www.gwu.edu/~uwp>) at GW).

Many medical schools have additional entrance requirements, which may include courses in biochemistry, genetics, and mathematics; even when such courses are not required, they are strongly recommended. With the exception of the specified requirements, applicants are urged to follow their personal interests in developing their course of study.

Seven-Year Integrated Bachelor of Arts/Doctor of Medicine

In addition to the early selection program described under the School of Medicine and Health Sciences, a seven-year integrated B.A./M.D. program has been designed for students of high ability and maturity who have decided, before applying to college, that they wish to become physicians and want to accomplish that goal in a shorter amount of time. Detailed information on this program is available through Admissions (<http://undergraduate.admissions.gwu.edu/seven-year-bamd>).

Preparation for Law School

Because a broad liberal education is the best undergraduate preparation for law school, Columbian College does not prescribe a prelegal curriculum. Advice about academic preparation for law school is provided by the pre-law

advisor in the Office of Undergraduate Studies (<http://columbian.gwu.edu/undergraduate/advising>).

Second Bachelor's Degree

Columbian College graduates who wish to receive a second bachelor's degree following graduation must satisfy the general College requirements and the requirements of their new major and degree and must complete 30 hours in residence in Columbian College.

Graduate Programs

CCAS Regulations

CCAS provides an on-line Graduate Student Handbook (<http://columbian.gwu.edu/graduate/graduatestudenthandbook>) that contains additional updated information on policies, regulations, and other matters of concern to enrolled and admitted students. It is the responsibility of the student to be aware of the information contained in both this Bulletin and the Handbook. Students should also consult departmental/program handbooks and guidelines.

Admission Requirements

A detailed description of the policies that follow is available at the Columbian College website (<http://columbian.gwu.edu/graduate>). Applicants must hold an undergraduate degree from an accredited institution of higher learning. Applicants should have a strong academic background, usually with a major, or equivalent, in the field in which they intend to study for an advanced degree. Normally, a *B* average or equivalent from an accredited college is required. With evidence of special promise, such as high Graduate Record Examination scores, an applicant whose academic record falls short of a *B* average may be accepted on a conditional basis. Meeting the minimum requirements does not assure acceptance. The departments/programs may, and often do, set higher admission standards. Students who apply in their senior year must provide evidence of the completion of their baccalaureate work before registration is permitted. Graduate courses taken prior to admission while in nondegree status are not used in assessing admissibility to degree programs and may not be transferable into those programs.

Most programs require applicants to submit scores on the GRE general test. In addition, some programs require scores on a GRE subject test (see the Columbian College section of the graduate admissions website graduate.admissions.gwu.edu). The applicant must have the Educational Testing Service send the required score reports directly to Columbian College of Arts and Sciences. GRE scores are valid for five years.

English Language Requirements for International Students

Applicants who are not citizens of countries where English is the official language or who do not hold a degree from a regionally accredited U.S. institution of higher learning are required to submit scores from the Test of English as a

Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the Pearson Test of English-Academic (PTE). Specified possible exemptions from this policy can be found at graduate.admissions.gwu.edu/english-language-requirements. The required minimum score for admission is 550 paper-based or 80 Internet-based on the TOEFL, an overall band score of 6.0 on the IELTS with no individual band score below 5.0, or a score of 53 on the PTE. Some programs may have higher minimum scores.

Applicants for graduate assistantships or fellowships must have a minimum score of 600 paper-based or 100 Internet-based on the TOEFL, an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE.

Students with the following English language test scores are exempt from taking English for Academic Purposes (EAP) courses: TOEFL, 600 paper-based or 100 Internet-based; IELTS, overall band score of 7.0 with no individual band score below 6.0; PTE, 68. Students with test scores below these minimums must register for an EAP course during their first semester. Students assigned EAP courses should anticipate additional tuition expenses as well as a possible extended period of time required to complete their degree program. EAP courses do not count toward degree requirements.

Readmission

A student who wishes to resume a graduate program that had been interrupted for a period of two years or more must file a new application form and provide supporting documentation to be considered for readmission. Readmission is not guaranteed, and the application is subject to review by the department concerned and/or the dean. The student may be required to take additional course work and qualifying examinations on the course work completed. A student who wishes to resume a graduate program that has been interrupted for a period of less than two years must petition the Department and Associate Dean. Readmission is not guaranteed.

Grades

Information on grades and computing the grade-point average is found under University Regulations (p. 13).

The symbol *I* (Incomplete) indicates that only a small portion of the required course work remains to be completed and that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work for a course. The conditions of the Incomplete must be detailed in a formal contract signed by the student and instructor and submitted to the department prior to recording the *I*. All other policies governing Incompletes are indicated under University Regulations (p. 13).

The symbol *IPG* (In Progress) is given for all thesis and dissertation research courses until the thesis or dissertation is completed. Upon the satisfactory completion of the thesis or dissertation, the symbol *IPG* is automatically changed to

CR (Credit). *CR* may be indicated for Advanced Reading and Research courses and independent research courses.

Scholarship Requirements

Graduate students are required to maintain a minimum cumulative grade-point average of 3.0 (*B*) in all course work taken following admission to a graduate program in the College. This includes credit taken for combined, dual, and joint degrees but excludes prerequisite and deficiency course work. A GPA below 3.0 results in termination from the program unless the department successfully petitions the dean's office for academic probation rather than termination. Individual departments/programs may require a higher average. Once a student has matriculated at GW, graduate course work that is taken at the University or through the Consortium and forms part of the student's departmentally approved program of studies may be included in the grade-point average. When a grade of *F* is received for a course, the grade is included in the student's grade-point average whether or not the course is repeated. Receiving a grade of *F* in a graduate course may be ground for probationary status or termination of degree candidacy.

A student may repeat a course in which a grade of *C* or above was received only when permitted to do so by the dean and the department concerned, unless the course description states that the course may be repeated for credit. A written statement of permission must be submitted for approval to the CCAS Graduate Office by the director of graduate studies. If such a course is repeated, both grades received remain on the student's record and are included in the student's grade-point average. The second taking of the course does not count toward degree requirements.

A graduate student may take an advanced undergraduate course for graduate credit only upon the approval of the department at the time of registration. Such approval is granted only with the provision that the student complete additional work in order to receive graduate credit.

Program of Studies

The program of studies is a formal agreement between a student and a department/program of the requirements to be met in completing a specific degree program as well as the dates by which each requirement must be completed. Students should consult their department's director of graduate studies to outline their program of studies as soon as they begin graduate work.

Students must make sure that they are fully informed of the requirements of Columbian College of Arts and Sciences as well as the requirements of their department or program. Students who must complete additional requirements as specified in their letter of admission must consult the Director of Graduate Studies early in their first semester.

Academic Work Load

All degree candidates must be registered for a minimum of 3 credits unless they are eligible for continuing research.

Full-time students register for 9 to 12 credits each fall and spring semester, half-time students for 5 to 8 credits, and part-time students for 3 or 4 credits. In the summer, full-time status requires 6 credits, half-time status, 3 credits. These credit amounts do not apply to students who have fewer than the stated number of credits remaining to complete their programs. No more than 15 credits may be taken during any one semester without permission of the department and the dean. Students who are employed more than 20 hours per week should not register for more than 6 credits in any semester.

Continuous Enrollment

All students must be continuously enrolled while working toward a degree, except during the summer sessions (unless required by the program or graduating in the summer). Students who have completed all course work and thesis or dissertation research requirements and are within CCAS deadlines must register for 1 credit of CCAS 0920 (master's students), or 0940 (doctoral students), Continuing Research, each semester until completion of the program; the course reference numbers are found in the Schedule of Classes under Columbian College. If continuous enrollment is not maintained, the student is dropped from the degree program unless the student is registered for an approved leave of absence by the CCAS Graduate Office.

Leave of Absence

A student who, for medical or family reasons, is temporarily unable to continue the program of studies may request leave of absence for a specific period of time, not to exceed two semesters during the total period of degree candidacy. If the request is approved by the department and the CCAS Graduate Office, CCAS will register the student for a leave of absence for each semester. A leave of absence is not granted for field research or for professional or career advancement.

Graduation Requirements

All students must submit an online Application for Graduation (<http://registrar.gwu.edu/online-graduation-application-instructions>) early in the semester or summer session in which they intend to graduate. Students must be registered in active status in the College during the semester or summer session in which they plan to graduate. Degrees are conferred in January, May, and August. Students who have completed the requirements for a degree but have not yet been awarded the degree will be issued a letter to this effect upon request to the CCAS Graduate Office. A commencement ceremony is held annually in May.

Fellowships and Financial Aid

Many departments offer graduate assistantships and fellowships; students should check with their department/program concerning funding opportunities. Graduate assistants and University Fellows are appointed by the associate dean for graduate studies, based on department recommendations. Other kinds of sponsored and University awards are also available. Awards are based on academic excellence, and only full-time graduate degree candidates in

Columbian College are eligible to be considered. Doctoral candidates may be funded for a maximum of five years, M.A. and M.S. candidates for a maximum of two years, and M.F.A. candidates for a maximum of three years.

Students applying for admission who also wish to apply for an assistantship/fellowship should submit a completed application for admission before the funding admission deadline ([http://www.gwu.edu/list-graduate-programs?field_school_tid\[\]=523](http://www.gwu.edu/list-graduate-programs?field_school_tid[]=523)). Currently enrolled students who wish to apply for graduate student support should consult their departmental requirements. Filing the assistantship/fellowship application entitles the student to consideration for all awards available in the student's department.

International students applying for graduate assistantships/fellowships should refer to the International Student Financial Aid section (p. 34) of this Bulletin for regulations governing the appointment of international graduate assistants.

Students who wish to apply for loans should indicate their intent to do so on the Graduate Admissions Application. Information concerning loans is contained in a booklet available from the University's Office of Student Financial Assistance; an overview of funding opportunities is available from the University's Office of Graduate Student Assistantships and Fellowships (<http://www.gwu.edu/~fellows>).

Partnerships

CCAS graduate programs have long-term partnerships with important Washington-area institutions that include the Smithsonian Institution; NIH, NIST, and other federal agencies; the Folger Shakespeare Library; the Shakespeare Theatre; and the Corcoran Gallery, Phillips Collection, and Textile Museum.

Requirements for the Master's Degree

Unless otherwise specified, the requirements listed below are applicable to candidates for all master's degrees offered by Columbian College of Arts and Sciences.

1. *General Requirements*—Minimum credit requirements follow, but it should be noted that many departments set credit requirements well above the number of credits stated here. Specific requirements appear under the name of the department or program concerned in the course listing section of this bulletin. For a master's degree program that includes a thesis, satisfactory completion of a minimum of 30 credit hours of approved graduate work, including 6 credit hours of thesis research, is required. For a master's degree program that does not include a thesis, the number of credit hours of approved graduate course work is determined by the department and normally consists of from 30 to 36 credit hours. Some departments offer a choice between a thesis option and a non thesis option. Undergraduate courses taken to make up deficiencies are not counted toward program requirements or the GPA.

Upon approval, up to one-half of the required graduate work may be taken in courses offered by another degree-granting

division of this University. With approval, up to one-quarter of work toward a master's degree may be taken in courses offered by the other affiliated institutions of the Consortium of Universities of the Washington Metropolitan Area. In all cases, at least one-half of the hours counting toward the master's degree must be taken after entering the program, in courses offered by Columbian College of Arts and Sciences.

Master's students have an overall four-year time limit for completion of all degree requirements.

2. *Transfer of Credit*—A maximum of one-quarter of the credit hours of graduate course work required for a degree may be approved for transfer to a graduate program in Columbian College from enrollment in nondegree status at GW or from another degree-granting school of this University or another accredited college or university. For a transfer of credit to be approved, *all* of the following conditions must be met: the course work must be from an accredited institution and must have been taken within the two years prior to matriculation; it must be approved by the department as part of the student's program of studies; it must not have been applied to the completion of requirements for another degree; it must be post-baccalaureate graduate-level course work; and the student must have received a grade of *B* or better in each course for which a transfer of credit is requested. Requests for transfer credit must be submitted in writing and approved by the department's director of graduate studies and the dean during the student's first year in the program. An official transcript of the course work must be on file before the request can be considered. Grades from transfer credit (including GW course taken in nondegree status) are not part of the graduate GPA.

Once enrolled in Columbian College of Arts and Sciences, students are not permitted to transfer course work taken outside the University, except under extraordinary circumstances; permission must be sought from the dean in advance.

3. *Special Program Requirements*—Certain programs require their degree candidates to demonstrate a reading knowledge of an appropriate foreign language or languages, a competence in quantitative methods, or some other special subject requirement. Courses taken at the undergraduate level to fulfill these requirements may not be counted in the number of graduate credit hours required for these programs.

4. *Master's Comprehensive Examination*—Most programs require degree candidates to pass a Master's Comprehensive Examination in the major subject. Examinations are held on dates fixed by the departments. The nature and form of the examination are the responsibility of the department or program. A student who fails to pass the Master's Comprehensive Examination may, with the approval of the department, repeat the examination at the next scheduled examination date. If the student fails a second time, no further

opportunity to take the examination is permitted, and the student's degree candidacy is terminated.

5. *The Thesis*—The main purposes of a master's thesis are to demonstrate the student's ability to make independent use of information and training and to furnish objective evidence of constructive powers in a chosen field. The student normally registers for 6 credit hours of thesis research supervised by a director and a reader. Registration for thesis research entitles the student to the advice and direction of the member of the faculty under whom the thesis is to be written. The thesis subject must be approved by the faculty members who will direct the thesis. All theses must be submitted electronically by the stated deadlines and meet the formatting and other requirements set forth on line at <http://library.gwu.edu/etds/>.

Requirements for the Doctor of Philosophy Degree

The Doctor of Philosophy program is divided into two parts: precandidacy and candidacy. During precandidacy, a student completes the general requirements and the General Examination. Once admitted to candidacy, the student prepares, submits, and defends the dissertation.

The minimum requirements are as follows:

1. *General Requirements*—The programs leading to the degree of Doctor of Philosophy require the satisfactory completion of a minimum of 72 credit hours of approved graduate course work, including at least 12 and at most 24 hours of dissertation research. A minimum of 48 of these hours must be taken in the precandidacy stage, in preparation for the General Examination. A maximum of 12 of these hours may be taken in courses offered by the other affiliated members of the Consortium of Washington Area Universities. The exact number of credit hours required for any part of the total program is assigned by each department and may exceed the minimum required by the Columbian College.

Ph.D. students have an overall eight-year time limit for completion of all degree requirements.

2. *Transfer of Credit*—Entering students who hold a master's degree from an accredited institution and in a field relevant to the proposed doctoral field of study may request transfer of up to 24 hours of credit toward a doctoral degree. For those who do not hold the master's degree, a maximum of 24 hours of credit may be transferred, provided the conditions listed under The Master's Programs (Item 2) above are met. Requests for transfer credit must be submitted in writing and approved by the department and the associate dean for graduate studies during the student's first year at GW. An official transcript of the course work must be on file before the request can be considered. Grades from transfer credit (including GW course taken in nondegree status) are not part of the graduate GPA.

3. *The General Examination*—The General Examination is composed of an examination in each of the areas of study

comprising the student's program. A student who fails to pass any part of the General Examination may, with the approval of the department, repeat the examination at the next scheduled examination date. If the student fails a second time, no further opportunity to take the examination is permitted, and the student's degree candidacy is terminated.

Satisfactory performance on the General Examination is required for admission to candidacy but does not guarantee it. A department will recommend advancement to candidacy only if satisfied with the student's performance in every aspect of the program, only after a dissertation advisor has been selected and a dissertation area determined, and only if the department is confident of the student's ability to complete the dissertation within the allotted time.

4. *The Degree of Master of Philosophy*—Upon departmental recommendation and approval of the dean, the degree of Master of Philosophy may be awarded to students who have been advanced to candidacy and successfully completed all requirements for the Doctor of Philosophy degree up to and including the General Examination. Not all departments recommend students for this degree. Students requesting the M.Phil. must submit an application for graduation. The degree is not automatically conferred upon advancing to candidacy.

5. *The Dissertation and Final Examination*—A dissertation directed or co-directed by a member of the GW faculty is required of each doctoral candidate as evidence of ability to perform scholarly research and interpret its results. The student normally enrolls for 12 to 24 hours of dissertation research after admission to candidacy. Dissertation Research must be taken in units of no less than 3 credits per semester.

When the dissertation has been approved by the director and the members of the Dissertation Research Committee, the candidate takes the Final Examination (the defense). A committee of examiners composed of Columbian College faculty and outside scholars conducts the examination. If the candidate passes, he or she is recommended to Columbian College for the degree of Doctor of Philosophy. The dissertation must be submitted electronically by the stated deadline and meet the formatting and other requirements set forth at <http://library.gwu.edu/etds/>.

Doctor of Medicine/Doctor of Philosophy Dual Degree Program

A dual degree program is available to qualified students who seek both the Doctor of Medicine and Doctor of Philosophy degrees. The requirements that must be fulfilled for both degrees are identical to those currently and separately established in the School of Medicine and Health Sciences and Columbian College of Arts and Sciences. A student working toward these degrees may apply a maximum of 24 credit hours of approved course work in the School of Medicine and Health Sciences toward the Doctor of Philosophy degree. The estimated time for the completion of this dual program is six years. In order to enter the dual degree program, a prospective

student must apply for and gain admission both to Columbian College and to the School of Medicine and Health Sciences separately through established procedures. Upon admission to both schools, the student may then apply for affiliation with the dual degree program.

Fellowships and Financial Aid

Many departments offer graduate assistantships and fellowships; students should check with their department concerning funding opportunities. Graduate assistants and University Fellows are appointed by the associate dean for graduate studies, based on department recommendations. Other kinds of sponsored and University awards are also available. Awards are based on academic excellence, and only full-time graduate degree candidates in Columbian College are eligible to be considered. Doctoral candidates receive preference in the awarding of full graduate teaching assistantship/fellowship packages. Doctoral candidates may be funded for a maximum of five years, M.A. and M.S. candidates for a maximum of two years, and M.F.A. candidates for a maximum of three years.

Students applying for admission who also wish to apply for a fellowship should submit a completed application for admission by January 5. Currently enrolled students who wish to apply for fellowships should consult their departmental requirements. Filing the fellowship application entitles the student to consideration for all awards available in the student's department.

International students applying for teaching assistantships should refer to Financial Aid, International Students, for regulations governing the appointment of international graduate teaching assistants.

Students who wish to apply for loans should indicate their intent to do so on the Graduate Admissions Application. Information concerning loans is contained in a booklet available from the University's Office of Student Financial Assistance; an overview of funding opportunities is available from the University's Office of Graduate Student Assistantships and Fellowships (<http://www.gwu.edu/~fellows>).

Partnerships

CCAS graduate programs have long-term partnerships with important Washington-area institutions that include the Smithsonian Institution; NIH, NIST, and other federal agencies; the Folger Shakespeare Library; the Shakespeare Theatre; and the Corcoran Gallery, Phillips Collection, and Textile Museum.

MAJORS

Undergraduate Majors

The Columbian College of Arts and Sciences offers the bachelors degrees listed below.

All fields listed below (except biological anthropology, biophysics, and statistics) may lead to the Bachelor of Arts degree. In addition to the fields listed here, students may pursue a Bachelor of Fine Arts in interior architecture and design.

- Africana Studies (<http://bulletin.gwu.edu/arts-sciences/africana-studies/ba>)
- American Studies (<http://bulletin.gwu.edu/arts-sciences/american-studies/ba>)
- Anthropology (<http://bulletin.gwu.edu/arts-sciences/anthropology/ba>)
- Arabic Studies (<http://bulletin.gwu.edu/arts-sciences/classical-near-eastern-languages-civilizations/ba-arabic-studies>)
- Archaeology (<http://bulletin.gwu.edu/arts-sciences/anthropology/ba-archaeology>)
- Art History (<http://bulletin.gwu.edu/arts-sciences/fine-arts-art-history/ba-art-history>)
- Art History and Fine Arts (<http://bulletin.gwu.edu/arts-sciences/fine-arts-art-history/ba-combined-art-history-fine-arts>)
- Biological Anthropology (<http://bulletin.gwu.edu/arts-sciences/anthropology/bs-biological-anthropology>)
- Biology, Bachelor of Arts (<http://bulletin.gwu.edu/arts-sciences/biological-sciences/ba-biology>)
- Biology, Bachelor of Science (<http://bulletin.gwu.edu/arts-sciences/biological-sciences/bs-biology>)
- Biophysics (<http://bulletin.gwu.edu/arts-sciences/physics/bs-biophysics>)
- Chemistry (<http://bulletin.gwu.edu/arts-sciences/chemistry/ba-bs-chemistry-medicine-dentistry-law-related-fields>)
- Chinese Language and Literature (<http://bulletin.gwu.edu/arts-sciences/east-asian-languages-literatures/ba-chinese>)
- Classical Studies (<http://bulletin.gwu.edu/arts-sciences/classical-near-eastern-languages-civilizations/ba-classical-studies>)
- Communication (<http://bulletin.gwu.edu/arts-sciences/organizational-sciences-communication/ba-communication>)
- Criminal Justice (<http://bulletin.gwu.edu/arts-sciences/sociology/ba-criminal-justice>)
- Dance (<http://bulletin.gwu.edu/arts-sciences/theatre-dance/ba-dance>)
- Economics, Bachelor of Arts (<http://bulletin.gwu.edu/arts-sciences/economics/ba>)
- Economics, Bachelor of Science (<http://bulletin.gwu.edu/arts-sciences/economics/bs>)
- English (<http://bulletin.gwu.edu/arts-sciences/english/ba>)
- English and Creative Writing (<http://bulletin.gwu.edu/arts-sciences/english/ba-english-creative-writing>)
- Environmental Studies (<http://bulletin.gwu.edu/arts-sciences/environmental-studies/ba>)
- Fine Arts (<http://bulletin.gwu.edu/arts-sciences/fine-arts-art-history/ba-fine-arts>)
- French Language, Literature, and Culture (<http://bulletin.gwu.edu/arts-sciences/romance-german-slavic-languages-literatures/ba-french-language-literature-culture>)
- Geography (<http://bulletin.gwu.edu/arts-sciences/geography/ba>)
- Geological Sciences, Bachelor of Arts (<http://bulletin.gwu.edu/arts-sciences/geological-sciences/ba>)
- Geological Sciences, Bachelor of Science (<http://bulletin.gwu.edu/arts-sciences/geological-sciences/bs>)
- German Language and Literature (<http://bulletin.gwu.edu/arts-sciences/romance-german-slavic-languages-literatures/ba-german-language-literature>)
- History (<http://bulletin.gwu.edu/arts-sciences/history/ba>)
- Human Services and Social Justice (<http://bulletin.gwu.edu/arts-sciences/sociology/ba-human-services-social-justice>)
- Interior Architecture and Design, Bachelor of Fine Arts (<http://bulletin.gwu.edu/arts-sciences/interior-architecture-design/bfa>)
- Japanese Language and Literature (<http://bulletin.gwu.edu/arts-sciences/east-asian-languages-literatures/ba-japanese>)
- Journalism and Mass Communication (<http://bulletin.gwu.edu/arts-sciences/media-public-affairs/ba-journalism-mass-communication>)
- Judaic Studies (<http://bulletin.gwu.edu/arts-sciences/judaic-studies/ba>)
- Mathematics, Bachelor of Arts (<http://bulletin.gwu.edu/arts-sciences/mathematics/ba>)
- Mathematics, Bachelor of Science (<http://bulletin.gwu.edu/arts-sciences/mathematics/bs>)
- Music (<http://bulletin.gwu.edu/arts-sciences/music/ba>)
- Organizational Sciences (<http://bulletin.gwu.edu/arts-sciences/organizational-sciences-communication/ba-organizational-sciences>)
- Peace Studies (<http://bulletin.gwu.edu/arts-sciences/peace-studies/ba-peace-studies>)
- Philosophy (<http://bulletin.gwu.edu/arts-sciences/philosophy/ba>)
- Philosophy: Public Affairs Focus (<http://bulletin.gwu.edu/arts-sciences/philosophy/ba-public-affairs>)
- Physics, Bachelor of Arts (<http://bulletin.gwu.edu/arts-sciences/physics/ba>)
- Physics, Bachelor of Science (<http://bulletin.gwu.edu/arts-sciences/physics/bs>)
- Political Communication (<http://bulletin.gwu.edu/arts-sciences/media-public-affairs/ba-political-communication>)
- Political Science (<http://bulletin.gwu.edu/arts-sciences/political-science/ba>)
- Political Science: Public Policy Focus (<http://bulletin.gwu.edu/arts-sciences/philosophy/ba-public-affairs>)

- Psychology (<http://bulletin.gwu.edu/arts-sciences/psychology/ba>)
- Religion (<http://bulletin.gwu.edu/arts-sciences/religion/ba>)
- Russian Language and Literature (<http://bulletin.gwu.edu/arts-sciences/romance-german-slavic-languages-literatures/ba-russian-language-literature>)
- Sociology (<http://bulletin.gwu.edu/arts-sciences/sociology/ba>)
- Spanish and Latin American Languages, Literatures, and Cultures (<http://bulletin.gwu.edu/arts-sciences/romance-german-slavic-languages-literatures/ba-spanish-latin-american-languages-literatures-cultures>)
- Speech and Hearing Science (<http://bulletin.gwu.edu/arts-sciences/speech-hearing-science/ba>)
- Statistics (<http://bulletin.gwu.edu/arts-sciences/statistics/bs>)
- Theatre (<http://bulletin.gwu.edu/arts-sciences/theatre-dance/ba-theatre>)
- Women's Studies (<http://bulletin.gwu.edu/arts-sciences/womens-studies/ba>)

Scholarship Performance in the Major

Major programs are defined by a set of required courses that can be internal to the home department or external to that department but still required in the major program. The prescribed curricula and minimum specific requirements for majors are outlined under each department's heading in this Bulletin. For all majors in all departments, a minimum grade of C– must be attained in all upper-level courses numbered in the 2000s through 4000s that are required for the major, regardless of whether those courses are internal or external to the home department.

If a student receives a grade of *D+*, *D*, or *D–* in such a course, the major department may permit that course to satisfy a curricular requirement (such as a prerequisite), but it will not count toward the minimum number of credits required for the major until the course is repeated and a satisfactory grade (C– or better) is attained. Once the student has completed the course with a satisfactory grade, credit hours earned the first time the course was taken will count toward the minimum number of credits required in the major program. Credit earned for the repetition will not count toward the degree.

This condition of C– or better does not apply to introductory-level courses (numbered in the 1000s) that may apply to the major, although a department may choose to implement such a restriction based on its own discretion.

Double Majors

Students who complete the requirements of two majors in Columbian College (such as mathematics and physics or history and economics) may graduate with a double major. Consult with advisors in the two departments concerned before officially declaring both majors with the Office

of Undergraduate Studies (<http://columbian.gwu.edu/undergraduate/advising>).

A Columbian College student may pursue a second major in the School of Business, the School of Engineering and Applied Science, or the Elliott School of International Affairs provided that permission to do so has been obtained from the appropriate administrative office. Students in other schools may also take a second major in Columbian College. Students wishing to pursue one of these options must request approval through the appropriate department and Columbian College's Office of Undergraduate Studies. In all cases, students must complete the general education requirements and a major in their home school in order to graduate.

Double majors do not result in two degrees. See Double Majors and Double Degrees under University Regulations.

Special Interdisciplinary Majors

A student may propose a special interdisciplinary major, in consultation with appropriate academic advisors. The proposed major must have valid and clearly defined academic goals to be considered for approval. Only students with a 3.0 or better cumulative grade-point average are eligible to propose a special interdisciplinary major. The proposal must be submitted for approval by the end of the fourth semester or the semester following completion of 45 credit hours, whichever comes first.

Approval of the proposed major rests with the Committee on Undergraduate Studies, (<http://columbian.gwu.edu/undergraduate/advising>) which must also approve the proposed name of the major and the composition of the committee that will oversee it. At least 45 credit hours of the major must be completed in Columbian College. Because of the broad scope of an interdisciplinary program, it may not be part of a double major although students are allowed to declare a minor with approval of the Committee on Undergraduate Studies.

At the discretion of the committee overseeing the major, the student must either write an acceptable senior thesis or pass a comprehensive examination in the last semester of study toward the degree. Students may apply for Special Honors by registering for CCAS 4191 Special Interdisciplinary Major Capstone. To be eligible, students must meet the requirements for Special Honors stated under University Regulations, must have a cumulative grade-point average of at least 3.5, and must receive a Pass With Distinction from all members of the major committee on the final project or thesis.

MINORS

Minors

Students who wish to familiarize themselves with a field outside their major may graduate with a minor in addition to the major.

Not all Columbian College departments offer undergraduate minors; the requirements prescribed by those that do are listed under the department concerned. A student interested in a minor should consult a faculty advisor in the applicable department and declare both major and minor programs through the Office of Undergraduate Studies. Students may pursue at most two minors.

At least one-half of the course work required for a minor must be done in residence. Grades of C– or better must be earned in upper-division courses, including such courses transferred as advanced standing from another institution. Courses passed with a grade below C– may be used to fulfill a minor field curricular requirement but may not be counted toward the total number of credit hours required for the minor.

Columbian College students can pursue minors in other schools of the University, as well as those in naval science and in sustainability. Note that Columbian College students are limited in the number of hours they may take in courses outside the College (“professional credit” courses). Refer to Courses Outside Columbian College.

Columbian College offers minors in the following fields:

- Africana Studies (<http://bulletin.gwu.edu/arts-sciences/africana-studies/minor>)
- American Studies (<http://bulletin.gwu.edu/arts-sciences/american-studies/minor>)
- Anthropology (<http://bulletin.gwu.edu/arts-sciences/anthropology/minor>)
- Applied Ethics (<http://bulletin.gwu.edu/arts-sciences/philosophy/minor-applied-ethics>)
- Arabic Studies (<http://bulletin.gwu.edu/arts-sciences/classical-near-eastern-languages-civilizations/minor-arabic-studies>)
- Arabic and Hebrew Languages and Cultures (<http://bulletin.gwu.edu/arts-sciences/classical-near-eastern-languages-civilizations/minor-arabic-hebrew-languages-cultures>)
- Archaeology (<http://bulletin.gwu.edu/arts-sciences/anthropology/minor-archaeology>)
- Art History (<http://bulletin.gwu.edu/arts-sciences/fine-arts-art-history/minor-art-history>)
- Art History and Fine Arts (<http://bulletin.gwu.edu/arts-sciences/fine-arts-art-history/combined-minor-art-history-fine-arts>)
- Biological Anthropology (<http://bulletin.gwu.edu/arts-sciences/anthropology/minor-biological-anthropology>)
- Biology (<http://bulletin.gwu.edu/arts-sciences/biological-sciences/minor-biology>)
- Chemistry (<http://bulletin.gwu.edu/arts-sciences/chemistry/minor>)
- Chinese Language and Literature (<http://bulletin.gwu.edu/arts-sciences/east-asian-languages-literatures/minor-chinese>)
- Classical Studies (<http://bulletin.gwu.edu/arts-sciences/classical-near-eastern-languages-civilizations/minor-classical-studies>)
- Communication (<http://bulletin.gwu.edu/arts-sciences/organizational-sciences-communication/minor-communication>)
- Creative Writing (<http://bulletin.gwu.edu/arts-sciences/english/minor-creative-writing>)
- Criminal Justice (<http://bulletin.gwu.edu/arts-sciences/sociology/minor-criminal-justice>)
- Cross-Cultural Communication (<http://bulletin.gwu.edu/arts-sciences/anthropology/minor-cross-cultural-communication>)
- Dance (<http://bulletin.gwu.edu/arts-sciences/theatre-dance/minor-dance>)
- Economics (<http://bulletin.gwu.edu/arts-sciences/economics/minor>)
- English (<http://bulletin.gwu.edu/arts-sciences/english/minor>)
- Film Studies (<http://bulletin.gwu.edu/arts-sciences/film-studies/minor>)
- Fine Arts (<http://bulletin.gwu.edu/arts-sciences/fine-arts-art-history/minor-fine-arts>)
- French Language, Literature, and Culture (<http://bulletin.gwu.edu/arts-sciences/romance-german-slavic-languages-literatures/minor-french-language-literature-culture>)
- Geographic Information Systems (<http://bulletin.gwu.edu/arts-sciences/geography/minor-geographic-information-systems>)
- Geography (<http://bulletin.gwu.edu/arts-sciences/geography/minor>)
- Geological Sciences (<http://bulletin.gwu.edu/arts-sciences/geological-sciences/minor>)
- German Language and Literature (<http://bulletin.gwu.edu/arts-sciences/romance-german-slavic-languages-literatures/minor-german-language-literature>)
- History (<http://bulletin.gwu.edu/arts-sciences/history/minor>)
- Human Services and Social Justice (<http://bulletin.gwu.edu/arts-sciences/sociology/minor-human-services-social-justice>)
- Italian Language and Literature (<http://bulletin.gwu.edu/arts-sciences/romance-german-slavic-languages-literatures/minor-italian-language-literature>)
- Japanese Language and Literature (<http://bulletin.gwu.edu/arts-sciences/east-asian-languages-literatures/minor-japanese>)
- Jazz Studies (<http://bulletin.gwu.edu/arts-sciences/music/minor-jazz-studies>)
- Journalism and Mass Communication (<http://bulletin.gwu.edu/arts-sciences/media-public-affairs/minor-journalism-mass-communication>)
- Judaic Studies (<http://bulletin.gwu.edu/arts-sciences/judaic-studies/minor>)
- Korean Language and Literature (<http://bulletin.gwu.edu/arts-sciences/east-asian-languages-literatures/minor-korean>)

- Law and Society (<http://bulletin.gwu.edu/arts-sciences/sociology/minor-law-society>)
- LGBT and Sexuality Studies (<http://bulletin.gwu.edu/arts-sciences/womens-studies/minor-lgbt-sexuality-studies>)
- Linguistics (<http://bulletin.gwu.edu/arts-sciences/linguistics/minor>)
- Logic (<http://bulletin.gwu.edu/arts-sciences/philosophy/minor-logic>)
- Mathematics (<http://bulletin.gwu.edu/arts-sciences/mathematics/minor>)
- Mind-Brain Studies (<http://bulletin.gwu.edu/arts-sciences/philosophy/minor-mind-brain-studies>)
- Music (<http://bulletin.gwu.edu/arts-sciences/music/minor>)
- Organizational Communication (<http://bulletin.gwu.edu/arts-sciences/organizational-sciences-communication/minor-organizational-communication>)
- Organizational Sciences (<http://bulletin.gwu.edu/arts-sciences/organizational-sciences-communication/minor-organizational-sciences>)
- Peace Studies (<http://bulletin.gwu.edu/arts-sciences/peace-studies/minor-peace-studies>)
- Philosophy (<http://bulletin.gwu.edu/arts-sciences/philosophy/minor>)
- Physics (<http://bulletin.gwu.edu/arts-sciences/physics/minor>)
- Political Science (<http://bulletin.gwu.edu/arts-sciences/political-science/minor>)
- Psychology (<http://bulletin.gwu.edu/arts-sciences/psychology/minor>)
- Religion (<http://bulletin.gwu.edu/arts-sciences/religion/minor>)
- Russian Language and Literature (<http://bulletin.gwu.edu/arts-sciences/romance-german-slavic-languages-literatures/minor-russian-language-literature>)
- Sociocultural Anthropology (<http://bulletin.gwu.edu/arts-sciences/anthropology/minor-sociocultural-anthropology>)
- Sociology (<http://bulletin.gwu.edu/arts-sciences/sociology/minor>)
- Spanish and Latin American Languages, Literatures, and Cultures (<http://bulletin.gwu.edu/arts-sciences/romance-german-slavic-languages-literatures/minor-spanish-latin-american-languages-literatures-cultures>)
- Speech and Hearing Science (<http://bulletin.gwu.edu/arts-sciences/speech-hearing-science/minor>)
- Statistics (<http://bulletin.gwu.edu/arts-sciences/statistics/minor>)
- Theatre (<http://bulletin.gwu.edu/arts-sciences/theatre-dance/minor-theatre>)
- Women's Studies (<http://bulletin.gwu.edu/arts-sciences/womens-studies/minor>)

MASTER'S

Columbian College of Arts and Sciences offers the following Master degrees.

- Master of Arts in the field of American studies (<http://bulletin.gwu.edu/arts-sciences/american-studies/ma>)
- Master of Arts in the field of anthropology (<http://bulletin.gwu.edu/arts-sciences/anthropology/ma>)
- Master of Arts in the field of art history (<http://bulletin.gwu.edu/arts-sciences/fine-arts-art-history/ma-art-history>)
- Master of Arts in the field of art therapy (<http://bulletin.gwu.edu/arts-sciences/art-therapy/ma>)
- Master of Arts in the field of art therapy practice (<http://bulletin.gwu.edu/arts-sciences/art-therapy/ma-practice>)
- Master of Arts in the field of criminology (<http://bulletin.gwu.edu/arts-sciences/sociology/ma-criminology>)
- Master of Arts in the field of economics (<http://bulletin.gwu.edu/arts-sciences/economics/ma>)
- Master of Arts in the field of English (<http://bulletin.gwu.edu/arts-sciences/english/ma-english-american-literature>)
- Master of Arts in the field of environmental resource policy (<http://bulletin.gwu.edu/arts-sciences/environmental-resource-policy/ma>)
- Master of Arts in the field of forensic psychology (<http://bulletin.gwu.edu/arts-sciences/professional-psychology/ma-forensic-psychology>)
- Master of Arts in the field of forensic psychology and counseling (<http://bulletin.gwu.edu/arts-sciences/professional-psychology/ma-forensic-psychology-counseling>)
- Master of Arts in the field of geography (<http://bulletin.gwu.edu/arts-sciences/geography/ma>)
- Master of Arts in the field of history (<http://bulletin.gwu.edu/arts-sciences/history/ma>)
- Master of Arts in the field of Islam (<http://bulletin.gwu.edu/arts-sciences/religion/ma-islam>)
- Master of Arts in the field of Jewish cultural arts (<http://bulletin.gwu.edu/arts-sciences/judaic-studies/ma-jewish-cultural-arts>)
- Master of Arts in the field of leadership education and development (<http://bulletin.gwu.edu/arts-sciences/organizational-sciences-communication/ma-leadership-education-and-development>)
- Master of Arts in the field of legal institutions and theory (<http://bulletin.gwu.edu/arts-sciences/political-science/ma-legal-institutions-theory>)
- Master of Arts in the field of mathematics (<http://bulletin.gwu.edu/arts-sciences/mathematics/ma-ms>)
- Master of Arts in the field of media and public affairs (<http://bulletin.gwu.edu/arts-sciences/media-public-affairs/ma>)
- Master of Arts in the field of museum studies (<http://bulletin.gwu.edu/arts-sciences/museum-studies/ma>)

- Master of Arts in the field of organizational sciences (<http://bulletin.gwu.edu/arts-sciences/organizational-sciences-communication/ma-organizational-sciences>)
- Master of Arts in the field of philosophy (<http://bulletin.gwu.edu/arts-sciences/philosophy/ma>)
- Master of Arts in the field of political science (<http://bulletin.gwu.edu/arts-sciences/political-science/ma>)
- Master of Arts in the field of public policy with a concentration in philosophy and social policy (<http://bulletin.gwu.edu/arts-sciences/philosophy/ma-public-policy>)
- Master of Arts in the field of public policy with a concentration in women's studies (<http://bulletin.gwu.edu/arts-sciences/womens-studies/ma-public-policy>)
- Master of Arts in the field of sociology (<http://bulletin.gwu.edu/arts-sciences/sociology/ma>)
- Master of Arts in the field of speech-language pathology (<http://bulletin.gwu.edu/arts-sciences/speech-hearing-science/ma-speech-language-pathology>)
- Master of Arts in the field of women's studies (<http://bulletin.gwu.edu/arts-sciences/womens-studies/ma-public-policy>)
- Master of Fine Arts in the field of classical acting (<http://bulletin.gwu.edu/arts-sciences/classical-acting/mfa>)
- Master of Fine Arts in the field of dance (<http://bulletin.gwu.edu/arts-sciences/theatre-dance/mfa-dance>)
- Master of Fine Arts in the field of fine arts (<http://bulletin.gwu.edu/arts-sciences/fine-arts-art-history/mfa>)
- Master of Fine Arts in the field of interior architecture and design (<http://bulletin.gwu.edu/arts-sciences/interior-architecture-design/mfa>)
- Master of Fine Arts in the field of production design (<http://bulletin.gwu.edu/arts-sciences/theatre-dance/mfa-production-design>)
- Master of Forensic Sciences (<http://bulletin.gwu.edu/arts-sciences/forensic-sciences/ma>)
- Master of Public Administration (<http://bulletin.gwu.edu/arts-sciences/public-policy-administration/mpa>)
- Master of Public Policy (<http://bulletin.gwu.edu/arts-sciences/public-policy-administration/mpp>)
- Master of Science in the field of applied mathematics (<http://bulletin.gwu.edu/arts-sciences/mathematics/ma-ms>)
- Master of Science in the field of biological sciences (<http://bulletin.gwu.edu/arts-sciences/biological-sciences/ms>)
- Master of Science in the field of biostatistics (<http://bulletin.gwu.edu/arts-sciences/biostatistics/ms>)
- Master of Science in the field of chemistry (<http://bulletin.gwu.edu/arts-sciences/chemistry/ms>)
- Master of Science in the field of crime scene investigation (<http://bulletin.gwu.edu/arts-sciences/forensic-sciences/ms-crime-scene-investigation>)
- Master of Science in the field of high-technology crime investigation (<http://bulletin.gwu.edu/arts-sciences/forensic-sciences/ms-high-technology-crime-investigation>)

- Master of Science in the field of molecular biochemistry and bioinformatics (<http://bulletin.gwu.edu/arts-sciences/biochemistry-molecular-medicine/ms>)
- Master of Science in the field of physics (<http://bulletin.gwu.edu/arts-sciences/physics/ms>)
- Master of Science in the field of statistics (<http://bulletin.gwu.edu/arts-sciences/statistics/ms>)

Unless otherwise specified, the requirements listed below are applicable to candidates for all master's degrees offered by Columbian College of Arts and Sciences.

General Requirements

Minimum credit requirements follow, but it should be noted that many departments set credit requirements well above the number of credits stated here. Specific requirements appear under the name of the department or program concerned in the bulletin. For a master's degree program that includes a thesis, satisfactory completion of a minimum of 30 credit hours of approved graduate work, including 6 credit hours of thesis research, is required. For a master's degree program that does not include a thesis, the number of credit hours of approved graduate course work is determined by the department. Some departments offer a choice between a thesis option and a non thesis option. Undergraduate courses taken without additional graduate-level work, deficiency coursework, and EAP courses are not counted toward program requirements or the GPA.

Upon approval, up to one-half of the required graduate work may be taken in courses offered by another degree-granting division of this University. With approval, up to one-quarter of work toward a master's degree may be taken in courses offered by the other affiliated institutions of the Consortium of Universities of the Washington Metropolitan Area. In all cases, at least one-half of the hours counting toward the master's degree must be taken after entering the program, in graduate courses offered by Columbian College of Arts and Sciences.

Master's students have an overall four-year time limit for completion of all degree requirements.

Transfer of Credit

A maximum of one-quarter of the credit hours of graduate course work required for a degree may be approved for transfer to a graduate program in Columbian College from enrollment in nondegree status at GW or from another degree-granting school of this University or another accredited college or university. For a transfer of credit to be approved, *all* of the following conditions must be met:

1. the course work must be from an accredited institution and must have been taken within the two years prior to matriculation;
2. it must be approved by the department as part of the student's program of studies;
3. it must not have been applied to the completion of requirements for another degree;

4. it must be post-baccalaureate graduate-level course work;
5. the course must have received a grade of *B* or better.

Requests for transfer credit must be submitted in writing and approved by the department's director of graduate studies and the dean during the student's first year in the program. An official transcript of the course work must be on file before the request can be considered. Grades from transfer credit are not part of the graduate GPA, except in the case of approved non-degree GW credits.

Once enrolled in Columbian College of Arts and Sciences, students are not permitted to transfer course work taken outside the University, except under extraordinary circumstances; permission must be sought from the associate dean and DGS in advance.

Special Program Requirements

Certain programs require their degree candidates to demonstrate a reading knowledge of an appropriate foreign language or languages, a competence in quantitative methods, or some other special subject requirement. Courses taken at the undergraduate level to fulfill these requirements may not be counted in the number of graduate credit hours required for these programs.

Master's Comprehensive Examination

Most programs require degree candidates to pass a Master's Comprehensive Examination in the major subject. Examinations are held on dates fixed by the departments. The nature and form of the examination are the responsibility of the department or program. A student who fails to pass the Master's Comprehensive Examination may, with the approval of the department, repeat the examination at the next scheduled examination date. If the student fails a second time, no further opportunity to take the examination is permitted, and the student's degree candidacy is terminated.

The Thesis

The main purposes of a master's thesis are to demonstrate the student's ability to make independent use of information and training and to furnish objective evidence of constructive powers in a chosen field. The student normally registers for 6 credit hours of thesis research supervised by a director and a reader. Registration for thesis research entitles the student to the advice and direction of the member of the faculty under whom the thesis is to be written. The thesis subject must be approved by the faculty members who will direct the thesis. All theses must be submitted electronically by the stated deadlines and meet the formatting and other requirements set forth on the Electronic Theses and Dissertation (<http://library.gwu.edu/etds>) webpage.

DOCTORAL

Doctoral degrees

- Doctor of Philosophy (p. 56)
- Doctor of Psychology (p. 58)

Doctor of Philosophy program

Columbian College of Arts and Sciences offers the following Doctor of Philosophy degrees

- Doctor of Philosophy in the field of American studies (<http://bulletin.gwu.edu/arts-sciences/american-studies/phd>)
- Doctor of Philosophy in the field of anthropology (<http://bulletin.gwu.edu/arts-sciences/anthropology/phd>)
- Doctor of Philosophy in the field of biological sciences (<http://bulletin.gwu.edu/arts-sciences/biological-sciences/phd>)
- Doctor of Philosophy in the field of biochemistry and systems biology (<http://bulletin.gwu.edu/arts-sciences/biomedical-sciences/phd-biochemistry-systems-biology>)
- Doctor of Philosophy in the field of microbiology and immunology (<http://bulletin.gwu.edu/arts-sciences/biomedical-sciences/phd-microbiology-immunology>)
- Doctor of Philosophy in the field of molecular medicine (<http://bulletin.gwu.edu/arts-sciences/biomedical-sciences/phd-molecular-medicine>)
- Doctor of Philosophy in the field of biostatistics (<http://bulletin.gwu.edu/arts-sciences/biostatistics/phd>)
- Doctor of Philosophy in the field of chemistry (<http://bulletin.gwu.edu/arts-sciences/chemistry/phd>)
- Doctor of Philosophy in the field of economics (<http://bulletin.gwu.edu/arts-sciences/economics/phd>)
- Doctor of Philosophy in the field of English (<http://bulletin.gwu.edu/arts-sciences/english/phd-english-american-literature>)
- Doctor of Philosophy in the field of history (<http://bulletin.gwu.edu/arts-sciences/history/phd>)
- Doctor of Philosophy in the field of American religious history (<http://bulletin.gwu.edu/arts-sciences/history/phd-american-religious-history>)
- Doctor of Philosophy in the field of hominid paleobiology (<http://bulletin.gwu.edu/arts-sciences/hominid-paleobiology/phd>)
- Doctor of Philosophy in the field of mathematics (<http://bulletin.gwu.edu/arts-sciences/mathematics/phd>)
- Doctor of Philosophy in the field of physics (<http://bulletin.gwu.edu/arts-sciences/physics/phd>)
- Doctor of Philosophy in the field of political science (<http://bulletin.gwu.edu/arts-sciences/political-science/phd>)
- Doctor of Philosophy in the field of psychology (<http://bulletin.gwu.edu/arts-sciences/psychology/phd>)

- Doctor of Philosophy in the field of public policy and administration (<http://bulletin.gwu.edu/arts-sciences/public-policy-administration/phd>)
- Doctor of Philosophy in the field of statistics (<http://bulletin.gwu.edu/arts-sciences/statistics/phd>)

The Doctor of Philosophy program is divided into two parts: precandidacy and candidacy. During precandidacy, a student completes the general requirements and the General Examination. Once admitted to candidacy, the student prepares, submits, and defends the dissertation.

General Requirements

The programs leading to the degree of Doctor of Philosophy require the satisfactory completion of a minimum of 72 credit hours of approved graduate course work, including at least 12 and at most 24 hours of dissertation research. A minimum of 48 of these hours must be taken in the precandidacy stage, in preparation for the General Examination. A maximum of 12 of these hours may be taken in courses offered by the other affiliated members of the Consortium of Washington Area Universities. The exact number of credit hours required for any part of the total program is assigned by each department and may exceed the minimum required by the Columbian College. Ph.D. students have an overall eight-year time limit for completion of all degree requirements.

Transfer of Credit

Entering students who hold a master's degree from an accredited institution and in a field relevant to the proposed doctoral field of study may request transfer of up to 24 hours of credit toward a doctoral degree. For those who do not hold the master's degree, a maximum of 24 hours of credit may be transferred, provided the conditions below are met:

1. the course work must be from an accredited institution and must have been taken within the two years prior to matriculation;
2. it must be approved by the department as part of the student's program of studies;
3. it must not have been applied to the completion of requirements for another degree;
4. it must be post-baccalaureate graduate-level course work;
5. the course must have received a grade of B or better.

Requests for transfer credit must be submitted in writing and approved by the department and the associate dean for graduate studies during the student's first year at GW. An official transcript of the course work must be on file before the request can be considered. Grades from transfer credit will not be counted towards the graduate degree GPA, except in the case of approved non-degree GW credits.

The General Examination

The General Examination is composed of an examination in each of the areas of study comprising the student's program. A student who fails to pass any part of the General

Examination may, with the approval of the department, repeat the examination at the next scheduled examination date. If the student fails a second time, no further opportunity to take the examination is permitted, and the student's degree candidacy is terminated.

Satisfactory performance on the General Examination is required for admission to candidacy but does not guarantee it. A department will recommend advancement to candidacy only if satisfied with the student's performance in every aspect of the program, only after a dissertation advisor has been selected and a dissertation area determined, and only if the department is confident of the student's ability to complete the dissertation within the allotted time.

The Degree of Master of Philosophy

Upon departmental recommendation and approval of the dean, the degree of Master of Philosophy may be awarded to students who have been advanced to candidacy and successfully completed all requirements for the Doctor of Philosophy degree up to and including the General Examination. Not all departments recommend students for this degree. Students requesting the M.Phil. must submit an online application for graduation (<http://registrar.gwu.edu/online-graduation-application-instructions>). The degree is not automatically conferred upon advancing to candidacy.

The Dissertation and Final Examination

A dissertation directed or co-directed by a member of the GW faculty is required of each doctoral candidate as evidence of ability to perform scholarly research and interpret its results. The student normally enrolls for 12 to 24 hours of dissertation research after admission to candidacy. Dissertation Research must be taken in units of no less than 3 credits per semester. When the dissertation has been approved by the director and the members of the Dissertation Research Committee, the candidate takes the Final Examination (the defense). A committee of examiners composed of Columbian College faculty and outside scholars conducts the examination. If the candidate passes, he or she is recommended to Columbian College for the degree of Doctor of Philosophy. The dissertation must be submitted electronically by the stated deadline and meet the formatting and other requirements set forth on the Electronic Theses and Dissertations website (<http://library.gwu.edu/etds>).

The Doctor of Medicine/Doctor of Philosophy Dual Degree Program

A dual degree program is available to qualified students who seek both the Doctor of Medicine and Doctor of Philosophy degrees. The requirements that must be fulfilled for both degrees are identical to those currently and separately established in the School of Medicine and Health Sciences and Columbian College of Arts and Sciences. A student working toward these degrees may apply a maximum of 24 credit hours of approved course work in the School of Medicine and Health Sciences toward the Doctor of Philosophy degree. The

estimated time for the completion of this dual program is six years. In order to enter the dual degree program, a prospective student must apply for and gain admission both to Columbian College and to the School of Medicine and Health Sciences separately through established procedures. Upon admission to both schools, the student may then apply for affiliation with the dual degree program.

The Doctor of Psychology program

Columbian College of Arts and Sciences offers the following Doctor of Psychology degree

- Doctor of Psychology in the field of professional psychology (<http://bulletin.gwu.edu/arts-sciences/professional-psychology/psyd-clinical-psychology>)

General Requirements

The program leading to the degree of Doctor of Psychology requires the satisfactory completion of a minimum of 83 credit hours of approved graduate work. A maximum of 12 credit hours may be taken in courses offered by the other affiliated members of the Consortium of Universities. Doctor of Psychology students have an overall five-year time limit for completion of all degree requirements.

Transfer of Credit

Provisions are the same as those of the Doctor of Philosophy Program, above, except that up to 27 credits may be transferred into the program.

The General Examination

Each student is required to complete the General Examination no later than the beginning of the final semester of the program. A student who fails to pass any part of the General Examination may, in exceptional circumstances, and with the approval of the program, repeat the examination at the next scheduled examination date. If the student fails a second time, no further opportunity to take the examination is permitted, and the student's degree candidacy is terminated.

The Degree of Master of Psychology

Students who have earned 53 credits toward the Psy.D. may receive the M.Psy. degree. Further information on the requirements of the Doctor of Psychology degree appears under Professional Psychology (<http://bulletin.gwu.edu/arts-sciences/professional-psychology>). Students requesting the M.Psy degree must submit an online application for graduation (<http://registrar.gwu.edu/online-graduation-application-instructions>). The degree is not automatically conferred after completion of 53 credits.

CERTIFICATES

Graduate certificate programs

Columbian College of Arts and Sciences offers a range of graduate certificate programs. Departments and programs offering graduate certificates are indicated in italics below.

- Graduate certificate in anatomical and (<http://bulletin.gwu.edu/arts-sciences/anatomy/certificate-anatomical-translational-sciences>) *translational sciences - Institute of Biomedical Sciences* (15 credits)
- Graduate certificate in budget and public finance - *Public Policy and Public Administration* (12 credits)
- Graduate certificate in contexts of environmental policy (<http://bulletin.gwu.edu/arts-sciences/environmental-resource-policy/certificate>) - *Environmental Resource Policy* (12 credits)
- Graduate certificate in documentary filmmaking (<http://bulletin.gwu.edu/arts-sciences/media-public-affairs/#certificatetext>) - *Media and Public Affairs* (9 credits)
- Graduate certificate in exhibit design (<http://bulletin.gwu.edu/arts-sciences/museum-studies/#certificatetext>) - *Museum Studies* (18 credits)
- Graduate certificate in financial mathematics (<http://bulletin.gwu.edu/arts-sciences/mathematics/#certificatetext>) - *Mathematics* (12 credits)
- Graduate certificate in forensic investigation (<http://bulletin.gwu.edu/arts-sciences/forensic-sciences/certificate-forensic-investigation>) - *Forensic Sciences* (15 credits)
- Graduate certificate in geographical information systems (<http://bulletin.gwu.edu/arts-sciences/geography/certificate-geographical-information-systems>) - *Geography* (12 credits)
- Graduate Certificate in LGBT health policy and practice (<http://bulletin.gwu.edu/arts-sciences/professional-psychology/certificate-lgbt-health-policy-practice>) - *Professional Psychology* (12 credits)
- Graduate certificate in mathematics (<http://bulletin.gwu.edu/arts-sciences/mathematics/#certificatetext>) - *Mathematics* (12 credits)
- Graduate certificate in museum collections management and care (<http://bulletin.gwu.edu/arts-sciences/museum-studies/#certificatetext>) - *Museum Studies, online* (12 credits)
- Graduate certificate in museum studies (<http://bulletin.gwu.edu/arts-sciences/museum-studies/#certificatetext>) - *Museum Studies* (18 credits)
- Graduate certificate in nonprofit management (<http://bulletin.gwu.edu/arts-sciences/public-policy-administration/certificate-nonprofit-management>) - *Trachtenberg School of Public Policy and Public Administration* (12 credits)
- Graduate certificate in survey design and data analysis (<http://bulletin.gwu.edu/arts-sciences/statistics/certificate-survey-design-data-analysis>) - *Statistics* (12 credits)

- Graduate certificate in women's studies (<http://bulletin.gwu.edu/arts-sciences/womens-studies/certificate>) - *Women's Studies* (12 credits)

Admission

Certificate students are not automatically admitted to a master's or doctoral program; they must submit an application for admission, meet the admission requirements, and be admitted to the degree program.

With departmental and Columbian College approval, students may concurrently register for a certificate and another Columbian College degree. If the certificate is conferred by another school, students must secure permission from both schools and apply and be admitted to both schools.

Certificate Completion

The Columbian College of Arts and Sciences requires all certificate candidates, both full-time and part-time, to complete all academic requirements within a maximum of three calendar years from admission.

To be eligible for a Graduate Certificate, students must complete all course requirements with a minimum GPA of 3.0, with no grades of *F*.

Transfer of Credit

All courses transferred in to a graduate certificate program must meet the following conditions:

- the course work must be from an accredited institution and must have been taken within the two years prior to matriculation;
- it must be approved by the department as part of the student's program of studies;
- it must be post-baccalaureate graduate-level course work;
- the course must have received a grade of *B* or better.

In addition, the following restrictions apply:

- at most one course from outside GW can be transferred in;
- at most two courses that have been used toward a previously completed CCAS program can be transferred in;
- no course may count toward more than one certificate.

Requests for transfer credit must be submitted in writing and approved by the department's director of graduate studies and the dean during the student's first year in the program. An official transcript of the course work must be on file before the request can be considered. Grades from transfer credit are not part of the graduate GPA.

Once enrolled in Columbian College of Arts and Sciences, students are not permitted to transfer course work taken outside the University, except under extraordinary circumstances; permission must be sought from the dean in advance.

SCHOOL OF MEDICINE AND HEALTH SCIENCES

Dean J. Akman

Senior Associate Dean for Health Sciences J. Bocchino

Associate Dean M. Corcoran

Assistant Dean L.M. Alexander

The School of Medicine and Health Sciences offers a broad range of undergraduate and graduate programs in medicine and health sciences. GW Health Sciences (<http://smhs.gwu.edu/academics/health-sciences>) is comprised of three academic departments: Clinical Research and Leadership (<http://smhs.gwu.edu/crl>), Physician Assistant Studies (<http://smhs.gwu.edu/pas>), and Physical Therapy and Health Care Sciences (<http://smhs.gwu.edu/pths>). All Health Sciences academic programs are housed within these departments. For information about the medical programs refer to <http://smhs.gwu.edu/>.

GW Health Sciences programs prepare professionals for roles in selected specialties within health care. These programs emphasize the interdependent roles and responsibilities of the network of health professionals who bring a variety of skills and expertise to health care practice, research and leadership. The mission of GW Health Sciences is built upon five tenets:

1. Interdisciplinary education provides a foundation for the future of health care delivery and generates collaborative structure and models for benchmarking and improvement;
2. Clinical training is a foundation for professional development in clinical practice;
3. Community service learning applies to communities broadly and is an important component of education for the transformation of communities of practice, research, and access in health care;
4. GW Health Sciences is uniquely positioned to cultivate leadership capacity development within the health sciences, medical, and scientific communities that we serve;
5. Scholarship among faculty, staff, and students alike contribute to the process of new knowledge creation and are a foundation for advancing translational science in health care.

REGULATIONS

Admission

To be considered for admission, applicants must submit a completed application form online, together with all required supporting documentation and a nonrefundable application fee.

Bachelor of Science in Health Sciences programs are designed for upper-division transfer students; applicants are expected to have completed a minimum of 60 credit hours of course work from a regionally accredited postsecondary institution prior

to entry. Applicants to the post-baccalaureate and graduate programs must hold a bachelor's degree from a regionally accredited college or university. Official transcripts must be submitted from each academic institution attended, regardless of whether credit was earned or is desired. The transcript(s) must indicate a minimum cumulative grade-point average of 2.5 on a scale of 4.0 for B.S.H.S. applicants and normally 3.0 on a scale of 4.0 for graduate students. The applicant must be in good standing and eligible to return to the academic institution most recently attended. Dual degree applicants must have a minimum cumulative grade-point average of 3.3 on a scale of 4.0. With evidence of special promise, an applicant whose academic record falls short of the minimum GPA may be accepted on a conditional basis; see Conditional Admission, below. Students who have been academically dismissed or suspended will not be considered for admission for at least one year from the date of their last suspension or dismissal.

Applicants should refer to the individual program descriptions for information on prerequisites and supporting documents, since these vary by program. It is the responsibility of applicants to ensure that all required application materials are submitted by the designated deadlines. Unofficial copies, facsimiles, or photocopies of transcripts, certificates, or diplomas will not be accepted. All records become the property of the University and cannot be returned.

Conditional Admission—Admission with conditions to one of the health sciences programs may be offered at the discretion of the director of admissions and the program director. The terms of admission will be outlined in the letter of acceptance from the University. When conditions have been met, notification is sent from the Office of Admissions.

Advance Tuition Deposit—Upon notification of acceptance, an advance tuition deposit will be required of students in selected programs, including those re-admitted. The deposit is credited toward tuition and is not refundable. Payment of the orientation fee, if applicable, must be submitted along with the tuition deposit and is also not refundable.

International Applicants

The following additional requirements pertain to international applicants:

Required Records—Official copies of all required documentation (transcripts, diplomas, and certificates as well as any other records listing subjects studied, grades received, examinations taken, the results of state examinations, and degrees received) must be submitted in the language in which the institution keeps its official records. If these documents are in a language other than English, they must be accompanied by a certified English translation. In addition, an evaluated copy completed by an acceptable international evaluation service must be submitted regardless of whether or not the official record is in English.

Language Tests—Applicants whose native language is not English or who are not citizens of countries where English is the official language must submit official test scores for either academic IELTS or TOEFL or PTE. The following are the minimum scores for admission consideration.

1. Academic IELTS: an overall band score of 7.0, with no individual band score below 6.0.
2. TOEFL: 600 paper-based or 100 Internet-based.
3. PTE: overall score of 68

The IELTS/TOEFL/PTE requirement may be waived for applicants who hold a baccalaureate degree or higher from a regionally accredited college or university located in a country in which English is the official language and also the language of instruction at the institution where the degree was completed.

Financial Certificate—A Financial Certificate must be completed and submitted with the application for admission by all international students planning to study at the University under the authorization of either a student (F) or exchange visitor (J) visa. Satisfactory completion and submission of the Financial Certificate is required for the issuance of a Form I-20 or IAP-66.

Unclassified Students

A student who wishes to take individual courses in health sciences programs must obtain permission to register as an unclassified student in the School of Medicine and Health Sciences. Application is made to the Office of Admissions, Health Sciences Programs. The dean's office, in conjunction with the appropriate department chair and program director, will determine if permission to register will be granted to an unclassified student. Permission to take individual courses, if granted, will generally be limited to a total of 6 credit hours.

Credit earned for courses taken as an unclassified student may be transferred to a degree program at the University if the courses are applicable to the program, have been taken for credit, and have been completed with the minimum grade required in the program. Successful completion of course work taken as an unclassified student does not guarantee admission to a degree program.

Readmission

Students who were previously registered in a health sciences program at the University but who did not register during the immediate preceding semester (summer sessions excluded) and who did not receive an approved leave of absence must apply for readmission. Students who have attended other academic institutions while not enrolled at this University must have complete official transcripts sent directly to the Office of Admissions, Health Sciences Programs, from each institution attended. Applications for readmission are considered on the basis of regulations and curricula currently in effect.

Transfer Credit for Graduate Students

The University reserves the right to refuse transfer credit in part or in whole or to allow credit provisionally. Up to 6 credit hours of course work may be accepted as transfer credit for graduate students provided the course work was completed within the past three years at a regionally accredited college or university, the course work was taken for graduate credit and did not apply toward completion of requirements for another degree, and the student earned a grade of *B* or better in the course. A limited amount of additional transfer credit may be approved upon petition to the senior associate dean.

Transfer Credit/Advanced Standing for Undergraduates

Advanced standing may be awarded for appropriate course work completed at other regionally accredited institutions provided minimum grade requirements have been met. The minimum acceptable grade is *C* for course work to be applied toward an undergraduate degree (*C-* grades and lower do not transfer). Advanced standing may also be awarded for nontraditional classroom or clinical experience as determined by the individual programs. The University reserves the right to refuse transfer credit in part or in whole or to allow credit provisionally. Health sciences degree programs vary in the amount of advanced standing they will award. For bachelor's programs, no more than 66 credit hours can be accepted as advanced standing from a two-year institution.

Degree candidates who are currently enrolled at this institution and plan to take courses at other regionally accredited institutions for transfer credit must first submit a course approval form for approval by the program director, department chair, and the appropriate dean.

Information regarding Academic Policies and Regulations information specific to Health Sciences can be found at <http://smhs.gwu.edu/academics/health-sciences/students/forms-policies>.

Evaluation of Academic Performance

Faculty are responsible for evaluating the performance of students in a meaningful, useful, and timely manner and for assigning grades on a basis that is rational, just, and unbiased. The authority for assignment of grades rests with academic departments or with faculty in the respective programs. Official grades for course work can be obtained from the Office of the Registrar each semester and are not given out by instructors.

Grades in Undergraduate Degree or Certificate and Post-Baccalaureate Certificate Programs

The following grading system is used: *A*, Excellent; *B*, Good; *C*, Satisfactory; *D*, Low Pass; *F*, Fail. At the discretion of the program and individual faculty, "+" or "-" grades may also be assigned. Except for courses that specifically state that repetition for credit is permitted, a candidate for an undergraduate degree or undergraduate-level certificate

(including post-baccalaureate certificate) at this University may not repeat a course in which a grade of *D* or better was received, unless a petition to do so is approved by the appropriate dean and/or chair upon recommendation of the program director. If a course is repeated, the first grade remains on the student's record and is included in the cumulative GPA. Symbols that may appear include *CR*, Credit; *AU*, Audit; *P*, Pass; *NP*, No Pass; *I*, Incomplete; *IPG*, In Progress; *W*, Authorized Withdrawal; *Z*, Unauthorized Withdrawal. These symbols are not considered in determining the GPA.

Grades in Graduate Degree and Certificate Programs—The following grading system is used: *A*, Excellent; *B*, Good; *C*, Minimum Pass; *F*, Fail. At the discretion of the program and individual faculty, "+" or "-" grades may also be assigned. Except for courses that specifically state that repetition is permitted, a candidate for a graduate degree or certificate at this University may not repeat a course in which a grade of *C* or better was received, unless a petition to do so is approved by the appropriate dean and/or chair upon recommendation of the program director. For graduate courses where a grade of *C-* or below was received, the course must be repeated for credit. If a course is repeated, the first grade remains on the student's record and is included in the cumulative GPA. Symbols that may appear include *CR*, Credit; *AU*, Audit; *P*, Pass; *NP*, No Pass; *I*, Incomplete; *IPG*, In Progress; *W*, Authorized Withdrawal; *Z*, Unauthorized Withdrawal. These symbols are not considered in determining the GPA.

Incomplete/In Progress—The symbol of *I* indicates that the instructor has received a satisfactory explanation for the student's inability to complete the required work of the course. The grade may be used only if the student's prior performance in the course has been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded *F*. Incomplete work must be made up by a date agreed upon by the instructor and the student but no later than the last day of the examination period for the semester immediately following the semester or summer session in which the grade of *I* is assigned. An extension of one additional semester can be requested by the student and may be approved by the program director. When work for the course is completed, the grade earned will be indicated in the form of *I* followed by the grade. The indication of *I* cannot be removed from the transcript. An Incomplete that is not changed within the allotted time automatically becomes an *F*.

The symbol of *IPG* is reserved for courses (such as special projects) in which the final class date extends beyond the official University deadline for submitting grades. Once the course has been completed, the *IPG* will be removed from the transcript and the earned grade recorded.

Unauthorized Withdrawal—The symbol of *Z* is assigned when students are registered for a course that they have not attended or have attended only briefly, and in which they have done no graded work. At the end of the academic year,

students' records are reviewed; if there is more than one *Z* per semester, a student's record may be encumbered until released by the student's advisor or academic dean. The symbol of *Z* is not a grade but an administrative notation.

The Grade-Point Average—Scholarship is computed in terms of the grade-point average, based only on the student's record in this University. The grade-point average is computed from grades as follows: *A*, 4.0; *A-*, 3.7; *B+*, 3.3; *B*, 3.0; *B-*, 2.7; *C+*, 2.3; *C*, 2.0; *C-*, 1.7; *D+*, 1.3; *D*, 1.0; *D-*, 0.7; *F*, 0, for each credit hour for which the student has registered in a degree program. In undergraduate courses, grades of *F* will be computed in the grade-point average but will not be considered as fulfilling degree requirements. In graduate programs, grades below *C-* are recorded as an *F*. Courses in which an *I* or *IPG* has been assigned will be included when a final grade has been recorded.

Appeal Procedures for Cases of Alleged Improper Academic Evaluation—Students who believe that a grade or evaluation is unjust or inaccurate may use the following appeal procedures:

1. The student must submit a written appeal to the relevant faculty member within 10 calendar days of the time the grade is posted, with a copy to the program director.
2. Resolution should be sought first at the program and departmental levels. A review shall be conducted by the program director and chair, consulting as appropriate the student and faculty involved.
3. If a mutually satisfactory resolution is not achieved, the student may, within 5 days of the decision being rendered, submit a written letter of appeal to the senior associate dean for health sciences. In considering the student's appeal, the senior associate dean will determine whether or not the grading procedures employed were fair, equitable, objective and consistent.
4. The senior associate dean may refer the appeal to the Health Sciences Evaluation Committee chair, who will form a three-person committee to serve as a peer review body. The committee will consist of the director of the program and two other members of the Health Sciences Evaluation Committee who are not involved in the case. Should the chair of the Health Sciences Evaluation Committee be the member of the faculty alleged to have made the improper academic evaluation, the appropriate dean will choose the three members of the peer review body from the members of the Health Sciences Evaluation Committee. If a sufficient number of faculty is not available from within the Committee, other faculty from the health sciences programs will be appointed.
5. The peer review body will review the student and course materials in order to render a recommendation to the senior associate dean. In the event that the peer review body chooses to conduct a hearing, the student may not have legal representation present. Students will be allowed to move forward in didactic coursework until the

grade appeal is resolved and a final decision rendered. However, students will not be allowed to move forward in clinical coursework until the grade appeal is resolved and a final decision rendered.

6. The peer review body will advise the senior associate dean on the outcome of their review and recommendations. Final action rests with the dean of the School of Medicine and Health Sciences.

Academic Standing

An enrolled student is considered to be in good academic standing by the School of Medicine and Health Sciences provided that he or she is not on probation or suspended. The following policies apply to all students within Health Sciences programs. In addition, Physician Assistant and Physical Therapy students must comply with policies and procedures outlined in the respective student handbook.

Warning—An undergraduate whose GPA falls between 2.0 and 2.6 and a graduate student whose GPA falls between 3.0 and 3.2 will receive a warning notification from the program director. The warning may be in the form of an email. A record of warning notifications will be kept with program records and HS student services.

Academic Probation—A full-time undergraduate student who has attempted a minimum of 12 credit hours of course work and whose cumulative GPA is below 2.0 will be placed on academic probation. A notation will be added to the student's transcript indicating probation. This probation extends over the period in which the student attempts an additional 12 credit hours of course work. Students while on probation will be allowed to register for no more than 12 credit hours per semester, unless approved by the program director and the appropriate dean.

A part-time undergraduate student who has attempted a minimum of 6 credit hours of course work and whose cumulative GPA is below 2.0 will be placed on academic probation. This probation extends over the period in which the student attempts an additional 6 credit hours of course work. Part-time students while on probation will be allowed to register for no more than 6 credit hours per semester, unless approved by the program director and the appropriate dean.

A full- or part-time graduate degree candidate whose cumulative GPA falls below 3.0 will be placed on academic probation. For full-time students, probation extends for one semester of full-time course work as defined by the program; for part-time students, probation extends during the period in which the student attempts 9 credit hours of course work. Students while on probation will be allowed to register for no more than 9 credit hours total, unless approved by the program director and the appropriate dean. For full-time students, this means no more than 9 credit hours per semester. For part-time students, they may register for a combination of 9 credit hours, but may not take additional courses (e.g. a part-time student on probation who attempts 6 credits one-term, would be restricted

to 3 credits in the next semester of coursework). If the program director and department chair determine that extenuating and valid circumstances exist, a student may be granted an extension on the probation period. If granted, the student will be notified by the program director outlining conditions to be met by the student. The student must return a statement to the program director by email or mail confirming that he/she has read, understands, and agrees to the conditions.

If the student fails to attain the conditions in the time specified, the student will be suspended (see *Suspension*). If the student succeeds in raising his/her cumulative GPA to the minimum scholarship requirements, academic probation will be lifted. A student who has been placed on probation more than one time will be recommended for dismissal.

Suspension—Students previously on probation who have not raised their cumulative GPA within the allowed number of credit hours (12 for undergraduate and 9 for graduates) may be suspended. A student suspended for poor scholarship may not register for any course work at the University, even as an auditor. The program director mails or emails a Letter of Suspension notifying the student of suspension. A suspended student may apply for readmission after the lapse of the semester following suspension. Evidence must then be presented to the student's program director, demonstrating that the student is now better prepared to pursue academic course work. Any student suspended twice for poor scholarship will not be readmitted.

A graduate student who is suspended for failure to raise the cumulative GPA to 3.0 may apply for readmission after the lapse of one calendar year by submitting evidence that he or she is now better prepared to pursue graduate course work. If the student fails to achieve the minimum GPA of 3.0 at the end of the semester following readmission, the program director may recommend that graduate study be terminated and further enrollment prohibited. This will be reviewed by the appropriate dean, whose recommendation will then be forwarded to the dean of the School of Medicine and Health Sciences.

Dismissal—Any student who has received one or more failing grades during a semester, or who has been placed on probation more than one time, may be recommended for dismissal by the program director. If the program recommends dismissal, an email or letter will be sent to the student informing him/her that the recommendation for dismissal is being reviewed by the senior associate dean for Health Sciences in consultation with the program director and chair. At the discretion of the senior associate dean, the recommendation may also be reviewed by the Health Sciences Evaluation Committee before submitting the recommendation to the dean of the School of Medicine and Health Sciences. The final decision about dismissal rests with the dean of the School of Medicine and Health Sciences.

Programs of Study (<http://smhs.gwu.edu/academics/health-sciences>)

Students enrolled in undergraduate degree, or undergraduate-level certificate (including post-baccalaureate certificate) programs must meet with their faculty advisor (in person or electronically) to review a program of study, listing all course work required for the degree or certificate, including applicable transfer credit. Changes to the program of study can be made through petition to the program. Changes may require approval of senior associate dean for health sciences.

Transfer Within Health Sciences Programs—To apply for a transfer from one health sciences program to another, a written request must be submitted to the Office of Student Services, Health Sciences Programs, along with the necessary supporting documentation required by the program. To change from certificate to degree program may require an admissions application.

Changes Within Health Sciences Programs—A student may not substitute one course for another without approval of the program director, the department chair, and the appropriate dean. After the deadlines for adding or dropping courses, a student must obtain the permission of the course instructor, the program director, and the appropriate dean to withdraw from a course or to change status from credit to audit or audit to credit.

Adding and Dropping Courses—During the registration period (before the end of the second week of classes) students may add or drop courses using GWeb. After the second week of classes, students who wish to add or drop a course must complete a Registration Transaction Form (<http://smhs.gwu.edu/academics/health-sciences/students/forms-policies>) and submit the form to the Student Services Office. Adding a course after the second week requires a signature of the instructor or other authorized member of the department.

A course dropped during the first four weeks of classes will not appear on the student's transcript. A course dropped after the fourth week but before the end of the eighth week will be assigned a notation of W (Authorized Withdrawal).

The deadline for dropping a course without academic penalty is the end of the eighth week of classes. After the end of the eighth week of classes, dropping a course without academic penalty is only possible after the student presents a petition to the senior associate dean and receives written permission.

All charges for courses from which the student withdraws are subject to the refund policy listed under Fees and Financial Regulations in this Bulletin. Failure to withdraw by these procedures can result in an extended financial obligation and the recording of a grade of F (Failure) or a notation of Z (Unauthorized Withdrawal).

Policies and Definitions

Credit—Credit is awarded only after registration for a course and satisfactory completion of the required work, or upon assignment of advanced standing.

Auditing—A student who has been admitted to a health sciences program may register as an auditor in a class only with the permission of the instructor, the faculty advisor, and the appropriate dean. An auditor receives no academic credit and is not required to take active part in the class or to pass examinations. A student who takes a course as an auditor may not repeat it later for credit. The regular program tuition rate is charged for audited courses.

Attendance—Students may attend only those classes for which they are officially registered. Regular attendance is expected. Students may be dropped from any course for undue absence. A student suspended for any cause may not attend classes during the period of suspension. Students are held responsible for all of the work of the courses in which they are registered, and all absences must be excused by the instructor before provision is made to make up the work missed.

Transcripts of Record—Official transcript of student records are issued by the Office of the Registrar and may be requested through GWeb by any student or former student who has paid all charges, including any outstanding student loan installments, due the University at the time of the request. A fee is charged for each transcript. Partial transcripts are not issued.

Continuous Enrollment—Once entered in a degree or certificate program, a student is expected to be continuously enrolled and actively engaged in fulfilling the requirements each semester of the academic year until such time as the degree is conferred or certificate completed. Students who break continuous enrollment at the University and do not request and receive a leave of absence (see below) must apply for readmission and, if granted, are subject to the requirements and regulations then in force. Students who plan to attend other institutions and apply credit earned toward graduation from this University must first obtain written approval from the program director and the appropriate dean.

Leave of Absence—A student who must interrupt active pursuit of the degree or certificate may petition the appropriate dean, through the program director, for a leave of absence for a specified period of time, generally limited to one calendar year. If the petition is approved, the student must register for leave of absence in each fall and spring semester, following regular registration procedures. The request should be made using the Petition Request Form (<http://smhs.gwu.edu/academics/health-sciences/students/forms-policies>). Students who discontinue their studies without being granted a leave of absence and students granted leaves who do not return to active study at the close of the period of approved absence must apply for readmission and are subject to the regulations

and requirements then in force. The right to use University facilities is suspended while the leave is in effect.

Policy Regarding Students Called to Active Military Duty—

Any student who is a member of a military reserve unit or the National Guard and is activated or called to active duty early in a semester or summer session automatically will be entitled to a full refund of all tuition and fees that he or she has paid toward the expenses of that academic term. If the notification of the call to active duty comes after the mid-term examinations or after other substantial graded work has been completed, the student will have the option of either taking a full refund of tuition and fees or taking an Incomplete in his or her courses with the privilege of returning to complete all required coursework at some future date without payment of any further tuition and fee charges. It is the responsibility of the student to present evidence of his or her activation to the Office of Student Accounts and to request the appropriate refund.

Should a degree student called up for active duty find it necessary to interrupt active pursuit of the degree he or she may petition the senior associate dean of health sciences for a leave of absence for a specified period of time, generally limited to one calendar year. Deans are encouraged to grant any request to extend the leave of absence for longer than the customary period should military service require an absence of more than one year.

All students on active duty will be automatically exempted from the request for a \$50 voluntary library contribution without requiring any communication from them or their initials on the bill.

Right to Change Rules and Programs—The University reserves the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine. The right is reserved by the University to make changes in programs without notice whenever circumstances warrant such changes. For the most up to date requirements, rules, and fees contact the Health Sciences Dean's Office (<http://smhs.gwu.edu/academics/health-sciences>).

Complete Withdrawal From the University—A student who wishes to withdraw from all courses during a given semester must complete a Complete Withdrawal Form (<http://registrar.gwu.edu>) and submit it to the Office of the Registrar. Forms are available on line, at deans' offices, and in the Office of the Registrar. The deadline for complete withdrawal from all courses without academic penalty is the end of the ninth week of classes. Complete withdrawal after the ninth week requires a petition to the dean.

All charges for courses from which the student withdraws are subject to the refund policy listed under Fees and Financial Regulations in this Bulletin. Failure to complete a Complete Withdrawal Form can result in an extended financial obligation

and the recording of grades of F (Failure) or notations of Z (Unauthorized Withdrawal).

Graduation Requirements

Degrees are conferred in January, May, and August. Graduating health sciences students may participate in the commencement ceremony held each year in May.

To be recommended for graduation by the faculty, students must have met admission requirements; have completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree; have filed an application for graduation prior to the published deadline; and be free from all indebtedness to the University. Registration, either for course work or for continuous enrollment, is required for the semester or summer session at the close of which the degree is to be conferred.

Applications for graduation must be filed by October 1 for fall graduation, February 1 for spring graduation, and July 1 for summer graduation.

Residence Requirements—The minimum number of credit hours that must be satisfactorily completed in residence in the School of Medicine and Health Sciences are listed; specific programs may establish higher residency requirements. Bachelor of Science in Health Sciences programs require that 30 of the last 60 credit hours be completed in residence. In Master of Science in Health Sciences and Doctor of Physical Therapy programs, all but 6 of the total required credit hours must be completed in residence. Courses applicable to the degree taken while registered in any division of The George Washington University in the semester immediately prior to admission to degree candidacy in the health sciences are counted as courses in residence.

Honors—Bachelor's degrees with honors are awarded to students whose academic records give evidence of particular merit. The student's grade-point average determines the level of honors as follows: *cum laude*, 3.4-3.59; *magna cum laude*, 3.6-3.79; *summa cum laude*, 3.8-4.0. The grade-point average includes all course work completed at GW and is not rounded off. To be eligible for an honors designation, a student must complete at least 60 hours of course work at GW.

The grade-point average is calculated by the Office of the Registrar, and the honors designation is entered on the transcript and the diploma of those students who earn an honors designation. If honors are entered in the commencement program, honors status will be determined on the basis of work completed by the end of the seventh term and entered only for those students who have completed seven-eighths of the credit hours required for the degree. Honors indicated on the diploma are calculated on the basis of all course work completed. The diploma and transcript are the official indication that a degree was conferred and honors awarded.

Financial Aid

The George Washington University's program of financial assistance for undergraduate students is described in *Financial Aid Sourcebook* from The George Washington University Office of Student Financial Assistance. Undergraduate aid consists of two basic types: awards for academic achievement or talent without reference to financial circumstances (merit scholarships) and scholarships, grants, loans, and employment based on academic achievement and demonstrated financial need. All undergraduate gift aid (institutional scholarships and grants, and federal grants) requires that the recipient be working on the first undergraduate degree and be registered for a full-time course load at GW. Students are limited to eight semesters of institutional aid. Loans and resident assistantships not based on financial need are available.

Several offices on campus provide information on financial assistance for graduate and certificate students. Information about funding opportunities is provided by the Office of Graduate Student Assistantships and Fellowships (<http://www.gwu.edu/~fellows>). Forms and information on federal loans for graduate students can be obtained from the Office of Student Financial Assistance (<http://gwired.gwu.edu/finaid/?url=finaid>). Information on the Federal Work-Study Program, cooperative education opportunities, and on- and off-campus employment is available from the GW Career Center (<http://careerservices.gwu.edu>). Gift aid (scholarships, grants, fellowships, assistantships, etc.) is taxable to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies or is dedicated to other costs, such as room and board. Federal grants may be taxable if, together with other gift assistance, they exceed the allowable costs. In the case of a student who is awarded tuition scholarships, grants, or awards from more than one source, the combined amount cannot exceed tuition charges; institutional aid will be adjusted to this limit.

In general, consideration for financial aid is restricted to students in good academic standing who meet the minimum grade-point average for particular awards and are not financially encumbered by any other University office. Applications for institutional or federal aid cannot be processed if the relevant tax returns have not been filed in accordance with the IRS Code. Documents submitted as part of aid applications become the property of the University and cannot be returned. Federal regulations require that the University report suspected cases of fraud or misrepresentation to the appropriate federal, state, and local authorities.

Information on financial aid is accurate at the time each Bulletin is prepared for press. Future changes in federal regulations or institutional policies may alter the application requirements or program guidelines.

UNDERGRADUATE

Bachelor's programs

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- Bachelor of Science in Health Sciences with a major in clinical management and leadership (p. 70)
- Bachelor of Science in Health Sciences with a major in clinical research administration
- Bachelor of Science in Health Sciences with a major in emergency medical services management
- Bachelor of Science in Health Sciences with a major in health intervention and disaster response
- Bachelor of Science in Health Sciences with a major in medical laboratory science
- Bachelor of Science in Health Sciences with a major in pharmaceutical sciences

Dual degrees

- Bachelor of Science in Health Sciences and Master of Science in Health Sciences in the field of clinical management and leadership
- Bachelor of Science in Health Sciences in the field of clinical management and leadership and Master of Science in Health Sciences in the field of health care quality
- Bachelor of Science in Health Sciences and Master of Science in Health Sciences in the field of clinical research administration
- Bachelor of Science in Health Sciences in the field of clinical research administration and Master of Science in Health Science in the field of regulatory affairs
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Minors

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- Associate in Science in the field of health sciences (p. 67)
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GRADUATE

Master's programs

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Post-baccalaureate programs

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Graduate certificates

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- Graduate certificate in the field of clinical and translational research (p. 93)
- Graduate certificate in the field of clinical research practice (p. 92)
- Graduate certificate in the field of health care quality (p. 92)
- Graduate certificate in the field of regulatory affairs (p. 92)

Military contract programs

- Undergraduate certificate in the field of health sciences laboratory science (medical laboratory technology)

UNDERGRADUATE PROGRAMS

ASSOCIATE IN SCIENCE IN THE FIELD OF HEALTH SCIENCES

REQUIREMENTS

The Associate in Science (AS) in Health Sciences (<http://smhs.gwu.edu/crl/military>) is a degree completion program that requires successful completion of **78 credits**. It is restricted to candidates who have earned 60 credits of college-level military courses. Eligible candidates include current (and former) Army 18D, Navy IDCs, Air Force IDMTs, Army or Navy MLTs; additional occupations may be reviewed for consideration. See the program website (<http://smhs.gwu.edu/crl/military>) for more information about eligibility.

The following requirements must be fulfilled:

60 credits of advanced standing

Advanced standing for military courses will be noted on the student's record and applied towards the associate's degree during the first semester the student is enrolled in the program.

12 credits of general education including:

6 credits of English composition

3 credits of mathematics or statistics

3 credits of humanities or social science

For students needing general education coursework, GW offers online classes that satisfy all of the requirements. Students planning to apply to B.S.H.S. programs are strongly encouraged to complete general education courses at GW by following the 'Recommended Coursework at GW' curriculum.

6 credits of Health Sciences distance education courses

Recommended general education courses at GW (if needed):

Two English composition courses from the following:

HSCI 2100 Writing and Composition in the Health Sciences

HSCI 2112W Writing in the Health Sciences

HSCI 4112W Rsrch/Wrtng in Health Sciences

Students are eligible for HSCI 4112W only if they have completed HSCI 2112W.

One mathematics or statistics course

HSCI 2115 Intro Biostatistics-Health Sci

One humanities or social sciences from the following:

HSCI 2101 Psychosocial Aspects of Health and Illness

HSCI 2103 Health Policy and the Health Care System

HSCI 2105 Current Issues in Bioethics

HSCI 2107 Health Care in Literature

HSCI 2111 Dev/Health Care Professions

Required GW health sciences distance education

Two of the following:

HSCI 2101 Psychosocial Aspects of Health and Illness

HSCI 2102 Pathophysiology

HSCI 2103 Health Policy and the Health Care System

HSCI 2104 Management of Health Science Services

HSCI 2105 Current Issues in Bioethics

HSCI 2108 Quality/Improvement/HealthCare

HSCI 2109 Trends&Innovations/HealthCare

HSCI 2113 Informatics in the HSci

HSCI 2103 and HSCI 2105 cannot be double-counted for a Humanities or Social Science requirement and a GW major course; they may only be used to complete one requirement.

Transferring credits

For an assessment on the transferability of your previous coursework contact the program office (<http://smhs.gwu.edu/>)

[crl/programs/chs/curriculum/as](http://smhs.gwu.edu/crl/programs/chs/curriculum/as)). Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

ASSOCIATE IN SCIENCE IN THE FIELD OF HEALTH SCIENCES LABORATORY TECHNOLOGY

REQUIREMENTS

This program is restricted and available only for students who completed their Undergraduate Certificate Program in Health Science Laboratory Technology, at GW, within the last five years. The Associate in Science (AS) in Health Science Laboratory Technology (HSLT) (<http://smhs.gwu.edu/crl/military>) offers Army and Navy MLTs the opportunity to enhance their skills, obtain the credentials to pursue advanced study, and be eligible for promotion within the military.

The Associate of Science (AS) in Health Sciences Laboratory Science for MLTs is a 72 credit degree program: 60 credits are awarded for completion of the MLT undergraduate certificate, and 12 credits of general education courses must be completed to meet the associate degree requirements. The general education requirements may be completed by taking coursework at a regionally accredited institution or at GW.

The following requirements must be fulfilled:

60 credits of advanced standing (Students who earned the undergraduate certificate in HSLT at GW prior to Summer 2014 meet the advanced standing requirement. Students who completed the undergraduate certificate in HSLT at GW in or after Summer 2014 should contact the program office for more information.)

12 credits of general education including:

6 credits of English composition

3 credits of mathematics (college algebra or higher) or statistics

3 credits of humanities or social sciences

GW offers general education courses online that will satisfy these requirements. (Students planning to apply to B.S.H.S. programs are strongly encouraged to complete general education courses at GW by following the recommended coursework at GW curriculum.)

Recommended general education courses offered at GW:

Two of the following English composition courses:

HSCI 2100	Writing and Composition in the Health Sciences
HSCI 2112W	Writing in the Health Sciences
HSCI 4112W	Rsrch/Wrtng in Health Sciences
Students may enroll in HSCI 4112W Rsrch/Wrtng in Health Sciences only if they have completed HSCI 2112W Writing in the Health Sciences.	
3 credits of mathematics or statistics	
HSCI 2115	Intro Biostatistics-Health Sci
One of the following humanities or social sciences courses:	
HSCI 2101	Psychosocial Aspects of Health and Illness
HSCI 2103	Health Policy and the Health Care System
HSCI 2105	Current Issus in Bioethics
HSCI 2107	Health Care in Literature
HSCI 2111	Dev/Health Care Professions

Transferring credits

For an assessment on the transferability of your previous coursework, please contact the program office (<http://smhs.gwu.edu/crl/programs/military/as-mlt>). Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN EMERGENCY MEDICAL SERVICES MANAGEMENT REQUIREMENTS

The Bachelor of Science in the Health Sciences with a major in the field of emergency medical services management (<http://smhs.gwu.edu/crl/programs/ems>) is an online degree completion program that requires successful completion of **120 credits**, 60 credits of which must be completed at GW. Up to 60 credits of coursework may be transferable from coursework taken elsewhere.

The following requirements must be fulfilled:

21 credits of general education including:

3 credits of English composition

6 credits of science*

12 credits of humanities and/or social sciences*

*Applicants may complete outstanding coursework through additional Health Sciences distance education courses.

39 credits of advanced standing and electives:

Academic credit may be awarded for ACE-recognized military courses, as appropriate. Additionally, up to 39 credits of advanced standing may be awarded to graduates of non-college based health programs who provide appropriate documentation (e.g., EMT or RN license).

Requirements for the major:

At least 60 credits of GW coursework including:

CML 2140	Mgt of HR in Health Sci Org
CML 2141	Planning&Mktg/Health Sciences
CML 2142	Financial Mgt/Health Sciences
EHS 2174	Foundations of Emergency Health Services Systems
EHS 2175	Community Risk Management and Safety in EHS
EHS 4110	Operations Mgt in EHS Systems
EHS 4111	Leadership Concepts in EHS
EHS 4112	Special Ops and Disaster Mgt
EHS 4144	Seminar in EHS Leadership
HSCI 2103	Health Policy and the Health Care System
HSCI 2104	Management of Health Science Services
HSCI 2108	QualityImprovement/HealthCare
HSCI 2112W	Writing in the Health Sciences
HSCI 2113	Informatics in the HSci
HSCI 2115	Intro Biostatistics-Health Sci
HSCI 4103	Health Care Law/Regulation
HSCI 4112W	Rsrch/Wrtng in Health Sciences
Three elective courses from the following (advisor approval is required):	
EHS 2211	Intro to Telemedicine

HSCI 2101	Psychosocial Aspects of Health and Illness
HSCI 2102	Pathophysiology
HSCI 2105	Current Issues in Bioethics
HSCI 2109	Trends&Innovations/HealthCare
HSCI 2110	Disease Prev/Health Promotion
HSCI 2111	Dev/Health Care Professions
HSCI 4102	Human Physiology/Extreme Enviro
HSCI 4105	Case Studies in Health Care
HSCI 4106	Intro to Epidemiology for HS

Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere provided it is:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN CLINICAL MANAGEMENT AND LEADERSHIP REQUIREMENTS

The Bachelor of Health Sciences with a major in the field of clinical management and leadership (<http://smhs.gwu.edu/crl/programs/cmlp>) is a degree completion program that requires successful completion of **120 credits**, 60 of which must be completed at GW. Up to 60 credits of coursework may be transferable from coursework taken elsewhere.

The following requirements must be fulfilled:

21 credits of general education:

3 credits of English composition*

6 credits of science*

12 credits of humanities and/or social sciences*

*Applicants may complete outstanding coursework through additional Health Sciences Distance Education courses.

39 credits of advanced standing and electives:

Academic credit may be awarded for ACE-recognized military courses, as appropriate. Additionally, up to 39 credits of advanced standing may be awarded to graduates of non-college based health programs who present appropriate documentation (e.g. EMT or RN license).

Requirements for the major:

At least 60 credits of GW coursework including:

CML 2140	Mgt of HR in Health Sci Org
CML 2141	Planning&Mktg/Health Sciences
CML 2142	Financial Mgt/Health Sciences
CML 2143	Current Issues/Hlth Sci Mgt
CML 4144	Seminar/Health Sci Leadership
HSCI 2103	Health Policy and the Health Care System
HSCI 2104	Management of Health Science Services
HSCI 2105	Current Issues in Bioethics
HSCI 2107	Health Care in Literature
HSCI 2108	QualityImprovement/HealthCare
HSCI 2109	Trends&Innovations/HealthCare
HSCI 2112W	Writing in the Health Sciences
HSCI 2113	Informatics in the HSci
HSCI 2115	Intro Biostatistics-Health Sci
HSCI 4103	Health Care Law/Regulation
HSCI 4105	Case Studies in Health Care
HSCI 4112W	Rsrch/Wrtng in Health Sciences

Three courses selected from the following (advisor approval is required):

HSCI 2101	Psychosocial Aspects of Health and Illness
HSCI 2102	Pathophysiology
HSCI 2110	Disease Prev/Health Promotion
HSCI 2111	Dev/Health Care Professions
HSCI 4106	Intro to Epidemiology for HS

Transferring credits

Up to 60 credits may be transferrable from courses taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the program office.

Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN CLINICAL RESEARCH ADMINISTRATION

REQUIREMENTS

The Bachelor of Science in the Health Sciences with a major in the field of clinical research administration (<http://smhs.gwu.edu/crl/programs/cra>) is a degree completion program that requires successful completion of **120 credits**, 60 credits of which must be completed at GW. Up to 60 credits of coursework may be transferrable from coursework taken elsewhere.

The following requirements must be fulfilled:

21 credits of general education including:

3 credits of English composition

6 credits of science*

12 credits of humanities and/or social sciences*

*Applicants may complete outstanding coursework through additional Health Sciences distance education courses.

39 credits of advanced standing and electives:

Academic credit may be awarded for ACE-recognized military courses, as appropriate. Additionally, up to 39 credits of advanced standing may be awarded to graduates of non-college based health programs who provide appropriate documentation (e.g., EMT or RN license).

Requirements for the major:

At least 60 credits of GW coursework including:

CRA 2101	Basics of Clinical Research
CRA 2102	Processes of Clinical Research
CRA 2103	Good Clinical Practices
CRA 2104	Business of Clinical Research
CRA 2105	Topics in Clinical Research

CRA 2107	Intro Monitoring Clin. Trials
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HSCI 2103	Health Policy and the Health Care System
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HSCI 2104	Management of Health Science Services
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HSCI 2105	Current Issues in Bioethics
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HSCI 2107	Health Care in Literature
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HSCI 2108	Quality Improvement/Health Care
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HSCI 2112W	Writing in the Health Sciences
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HSCI 2113	Informatics in the HSci
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HSCI 2115	Intro Biostatistics-Health Sci
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HSCI 4103	Health Care Law/Regulation
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HSCI 4105	Case Studies in Health Care
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HSCI 4112W	Rsrch/Wrtng in Health Sciences
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Three HSCI elective courses selected from the following (advisor approval is required):

HSCI 2102	Pathophysiology
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HSCI 2109	Trends&Innovations/HealthCare
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HSCI 2110	Disease Prev/Health Promotion
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HSCI 2111	Dev/Health Care Professions
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HSCI 4106	Intro to Epidemiology for HS
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Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CYTOTECHNOLOGY

REQUIREMENTS

This is a restricted program. The Medical Education Training Campus (METC) Cytotechnology Program (<http://smhs.gwu.edu/crl/military>) is a contract program for pre-selected military service members, established between GW

and the METC. This contract program provides GW educational services to eligible active duty U.S. Army servicemembers. These services include:

- Academic advising for students who have outstanding prerequisites for eligibility
- Application and registration services
- Academic record maintenance
- Conferral of a Bachelor of Science in Health Sciences to students upon successful completion of 126 semester hours of credit hours from the program of study.

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN HEALTH INTERVENTION AND DISASTER RESPONSE

REQUIREMENTS

The Bachelor of Science in Health Sciences with a major in the field of health intervention and disaster response (HIDR) (<http://smhs.gwu.edu/crl/programs/hidr>) is an online degree completion program that requires successful completion of **120 credits**, 60 of which must be completed at GW. Up to 60 credits of coursework may be transferable from coursework taken elsewhere.

The following requirements must be fulfilled:

21 credits of general education including:

3 credits of English composition

6 credits of science*

12 credits of humanities and/or social sciences*

*Applicants may complete outstanding coursework through additional Health Sciences distance education courses.

39 credits of advanced standing and electives:

Academic credit may be awarded for ACE-recognized military courses, as appropriate. Additionally, up to 39 credits of advanced standing may be awarded to graduates of non-college based health programs who provide appropriate documentation (e.g., EMT or RN license).

Requirements for the major:

At least 60 credits of GW coursework including:

CML 2143 Current Issues/Hlth Sci Mgt

EHS 2211 Intro to Telemedicine

EHS 4110 Operations Mgt in EHS Systems

HSCI 2101	Psychosocial Aspects of Health and Illness
HSCI 2102	Pathophysiology
HSCI 2104	Management of Health Science Services
HSCI 2105	Current Issues in Bioethics
HSCI 2110	Disease Prev/Health Promotion
HSCI 2112W	Writing in the Health Sciences
HSCI 2113	Informatics in the HSci
HSCI 2114	Healthcare/Developing Nations
HSCI 2115	Intro Biostatistics-Health Sci
HSCI 4102	Human Physiology/Extreme Enviro
HSCI 4106	Intro to Epidemiology for HS
HSCI 4112W	Rsrch/Wrtng in Health Sciences
MLS 4114	Clinical Microbiology
MLS 4115	Parasitology and Mycology
MLS 4141	Immunology and Serology
Three HSCI elective courses selected from the following (advisor approval is required):	
EHS 4112	Special Ops and Disaster Mgt
HSCI 2103	Health Policy and the Health Care System
HSCI 2111	Dev/Health Care Professions
HSCI 4105	Case Studies in Health Care

Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN MEDICAL LABORATORY SCIENCE

REQUIREMENTS

The Bachelor of Science in Health Sciences with a major in the field of medical laboratory science (MLS) (<http://smhs.gwu.edu/crl/programs/mls>) is a degree completion program that requires successful completion of **120 credits**, 60 credits of which must be completed at GW. Up to 60 credits of coursework may be transferable from coursework taken elsewhere.

The following requirements must be fulfilled:

41 credits of general education including:

3 credits of English composition

8 credits of biology (lecture and 'hands-on' lab)

4 credits of microbiology (lecture and 'hands-on' lab)

8 credits of chemistry (lecture and 'hands-on' lab)

3 credits of organic chemistry or biochemistry

3 credits of college algebra, statistics, or higher

12 credits of humanities and/or social sciences*

Medical laboratory technicians (MLTs) may receive transfer credit for biological sciences, general microbiology, general chemistry, and organic chemistry/biochemistry courses.

*Applicants may complete outstanding coursework through additional Health Sciences distance education courses.

19 credits of electives

Academic credit may be awarded for ACE-recognized military courses, as appropriate.

Requirements for the major:

At least 60 credits of GW coursework including:

45 credits of MLS courses selected from the following:

MLS 4114 Clinical Microbiology

MLS 4115 Parasitology and Mycology

MLS 4118 Laboratory Operations

MLS 4120 Urinalysis & Body Fluids

MLS 4124 Clinical Microbiology II

MLS 4128 Hematology I

MLS 4129 Hematology II

MLS 4140 Clinical Laboratory Mgt

MLS 4141 Immunology and Serology

MLS 4145 Clinical Biochemistry

MLS 4150 Immunohematology

MLS 4151 Molecular Diagnostics

MLS 4155 Clinical Biochemistry II

MLS 4159 Capstone Seminar

MLS 4160 Blood Bank Practicum

MLS 4161 Clinical Biochemistry Practicum

MLS 4162 Hematology and Hemostasis Practicum

MLS 4163 Immunology and Serology Practicum

MLS 4164 Clinical Microbiology Practicum

MLS 4165 Urinalysis and Body Fluids Practicum

Clinical rotations are completed at an approved clinical site and vary in length, lasting between 1 to 4 weeks each, for a total of 4 months.

15 credits of health science distance education

HSCI 2102 Pathophysiology

HSCI 2105 Current Issues in Bioethics

HSCI 2112W Writing in the Health Sciences

HSCI 4112W Rsrch/Wrtng in Health Sciences

HSCI Elective

Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN PHARMACEUTICAL SCIENCES

REQUIREMENTS

The Bachelor of Science in Health Sciences with a major in pharmaceutical sciences (<http://smhs.gwu.edu/pths/programs/pharmaceutical-sciences>) is a degree completion program that requires successful completion of **129 credit hours**, 69 credits of which must be completed at GW. Up to 60 credits of coursework may be transferable from coursework taken elsewhere.

The following requirements must be fulfilled:

60 credits including:

3 credits of Calculus

3 credits of Communication

8 credits of Biology with lab

4 credits of Electives

6 credits of English Composition

8 credits of General Chemistry with lab

12 credits of Humanities and/or Social Sciences

4 credits of Microbiology with lab

8 credits of Organic Chemistry with lab

4 credits of Physics with lab

At least 69 credits of GW coursework including:

CRA 2101 Basics of Clinical Research

HSCI 2102 Pathophysiology

HSCI 2105 Current Issues in Bioethics

HSCI 2112W Writing in the Health Sciences

HSCI 2115 Intro Biostatistics-Health Sci

HSCI 3116 Genome-Based Med & Pharmacology

HSCI 4112W Rsrch/Wrtng in Health Sciences

PHAR 3170 Intro- Pharmacology/Toxicology

PHAR 3190 Prin of Molecular Medicine

PHRG 2141 Mol. Bio for Pharmacogenomics

PHRG 2142 Mol. Tech for Pharmacogenomics

PHRG 4152 Pharmaceutics I *

PHRG 4153 Pharmaceutics II *

PHRG 4154 Integrated Basic Hlth Sciences I *

PHRG 4155 Integrated Basic Hlth Sciences II *

PHRG 4156 Integrated Basic Hlth Sciences III *

PHRG 4157 Integrated Basic Hlth Sciences IV *

PHRG 4160 Integrated Basic Hlth Sci Lab I *

PHRG 4161 Integrated Basic Hlth Sci Lab II *

PHRG 4163 Pharmacogenomics Essentials *

PHRG 4169 Nonprescription Products *

PHRG 4172 Clin. Drug Info. Skills *

Elective tracks (one of the following)

Pharmacy practical skills track (required for SU's PharmD)

PHRG 4151 Intro to Pharmacy Practice Lab *

PHRG 4165 Patient Counseling and Comm *

PHRG 4167 Intro. Pharm. Pract. Exp. I *

PHRG 4168 Intro. Pharm. Pract. Exp. II *

PHRG 4170 Out. Pharm. Prac. Lab *

PHRG 4171 Sterile Compounding Lab *

Research track (recommended if pursuing Ph.D.)

HSCI 2103 Health Policy and the Health Care System

HSCI 4198 Mentored Res. I

HSCI 4199 Mentored Res. II

* Course taught by SU faculty and applied towards SU's PharmD.

Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN CLINICAL HEALTH SCIENCES

REQUIREMENTS

This program is restricted based on military occupation and status. Please see the program website for more information on eligibility. The BSHS with a major in Clinical Health Sciences (<http://smhs.gwu.edu/crl/military>) is a degree completion program that requires successful completion of **120 credit hours**, divided into three degree components

The following requirements must be fulfilled:

Advanced Standing and Electives (60 credit hours)

During the first semester the student is enrolled in the program, advanced standing for eligible military courses will be noted on the student's record and applied towards the bachelor's degree.

General Education (30 credit hours)

Biological Sciences (4 credits)

English Composition (6 credits)

Mathematics, Science, or Statistics (8 credits)

Humanities and/or Social Sciences (12 credits)

If a student still needs general education coursework, GW offers online coursework for these requirements. Students are encouraged to complete general education courses at GW by following the recommendations below.

Recommended Coursework at GW (for those missing general education requirements)

General Education

English Composition

HSCI 2100 Writing and Composition in the Health Sciences

HSCI 2112W Writing in the Health Sciences

HSCI 4112W Rsrch/Wrtng in Health Sciences

Biology

HSCI 4102 HumanPhysiology/ExtremeEnviro

Math, Science, or Statistics

HSCI 2102 Pathophysiology

HSCI 2115 Intro Biostatistics-Health Sci

HSCI 4106 Intro to Epidemiology for HS

Humanities or Social Sciences (up to four from the following)

HSCI 2103 Health Policy and the Health Care System

HSCI 2105 Current Issus in Bioethics

HSCI 2107 Health Care in Literature

HSCI 2111 Dev/Health Care Professions

HSCI 4103 Health Care Law/Regulation

HSCI 4105 Case Studies in Health Care

Coursework at GW (30 credit hour minimum)

Health Sciences Distance Education (30 credit hours)

Foundation Courses (five from the following)

EHS 2211 Intro to Telemedicine

EHS 4101 Humanitarian Relief Ops

HSCI 2101 Psychosocial Aspects of Health and Illness

HSCI 2102 Pathophysiology

HSCI 2103 Health Policy and the Health Care System

HSCI 2104 Management of Health Science Services

HSCI 2105 Current Issus in Bioethics

HSCI 2108 QualityImprovement/HealthCare

HSCI 2109 Trends&Innovations/HealthCare

HSCI 2113 Informatics in the HSci

HSCI 2114 Healthcare/Developing Nations

CHS Courses (required)

HSCI 2110 Disease Prev/Health Promotion

HSCI 2130 Primary Care Skills Practicum *

HSCI 2131 Adult Primary Care Practicum *

HSCI 2132 Primary Care Mental Hlth Pract *

HSCI 2133 Specialized Clinical Experience *

HSCI 2190 Independent Study-Clin Hlth Sci

*Must be completed while on active-duty. Students arrange rotations at their current duty stations. All rotations require a MD or PA preceptor.

HSCI 2102 Pathophysiology, HSCI 2113 Informatics in the HSci, and HSCI 2105 Current Issues in Bioethics cannot be double-counted for a general education requirement and a GW Major course; they may only be used to complete one requirement.

Transferable Coursework (90 credit hour maximum)

For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a C or better (C- grades do not transfer)

DUAL BSHS AND MSHS IN CLINICAL RESEARCH ADMINISTRATION

REQUIREMENTS

This multi-level online dual degree program offers academically qualified individuals a seamless and accelerated pathway for completing both the Bachelor of Science in Health Sciences (BSHS) in Clinical Research Administration and the Master of Science in Health Sciences (MSHS) in Clinical Research Administration (CRA) (<http://smhs.gwu.edu/crl/programs/cra>). Undergraduate and graduate degrees will be conferred sequentially, with the BSHS awarded upon completion of 120 credits (nine of which are taken for graduate credit). The MSHS is awarded following completion of an additional 27 credits of graduate coursework.

BSHS in Clinical Research Administration

The BSHS with a major in Clinical Research Administration is a degree completion program that requires successful completion of **120 credit hours**, divided into three degree components, 60 credits of which must be completed at GW. Up to 60 credits of coursework may be transferable from coursework taken elsewhere.

The following requirements must be fulfilled:

21 credits of general education including:

3 credits of English Composition

6 credits of science*

12 credits of humanities and/or Social Sciences*

*Applicants may complete outstanding coursework through additional Health Sciences Distance Education courses.

39 credits of advanced standing and electives

Academic credit may be awarded for ACE-recognized military courses, as appropriate. Additionally, up to 39 credits of advanced standing may be awarded to graduates of non-college based health programs who present appropriate documentation (e.g. EMT or RN license).

60 credits of health sciences distance education

Requirements for the major:

At least 60 credits of GW coursework including:

Health sciences distance education courses

CRA 2101	Basics of Clinical Research
CRA 2102	Processes of Clinical Research
CRA 2103	Good Clinical Practices
CRA 2104	Business of Clinical Research
CRA 2105	Topics in Clinical Research
CRA 2107	Intro Monitoring Clin. Trials
HSCI 2103	Health Policy and the Health Care System
HSCI 2104	Management of Health Science Services
HSCI 2105	Current Issues in Bioethics
HSCI 2107	Health Care in Literature
HSCI 2108	Quality Improvement/Health Care
HSCI 2112W	Writing in the Health Sciences
HSCI 2113	Informatics in the HSci
HSCI 2115	Intro Biostatistics-Health Sci
HSCI 4103	Health Care Law/Regulation
HSCI 4105	Case Studies in Health Care
HSCI 4112W	Research/Writing in Health Sciences

Graduate strategic leadership courses

HSCI 6223	Topics -Health Care Leadership
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HSCI 6240 Issues & Trends in Health Syst

HSCI 6241 The Health Care Enterprise

MSHS in Clinical Research Administration

The MSHS in Clinical Research Administration requires successful completion of an additional **27 credit hours** of graduate coursework, including 6 credit hours in research.

Clinical research administration courses

CRA 6201 Critical Analysis Clin Rsch

CRA 6202 Clinical Trials Management

CRA 6203 Partnerships w/Human Subjects

CRA 6204 The Clinical Research Industry

CRA 6210 MedicalWriting/ClinicalResrch

CRA 6275 Ldrshp&Change in ClinRschrAdmin

Graduate research courses

HSCI 6270 Resear Meth Hlth Prof I

HSCI 6271 Rsch Meth Hlth Prof II

Elective course (one from the following)

CRA 6208 International Clinical Rsrch

CRA 6209 Monitoring Clinical Research

HCQ 6201 Building a Quality Culture

HSCI 6263 Biostatistics Transl Research

HSCI 6264 Epidemiology Translational Res

Credit for HSCI 6223, HSCI 6240, and HSCI 6241 is applied to both the BSHS and MSHS degrees.

Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

DUAL BSHS AND MSHS IN THE FIELD OF CLINICAL MANAGEMENT AND LEADERSHIP REQUIREMENTS

This multi-level dual degree program offers academically qualified individuals a seamless and accelerated pathway for completing both the Bachelor of Science in Health Sciences (BSHS) and the Master of Science in Health Sciences (MSHS) in Clinical Management and Leadership (<http://smhs.gwu.edu/crl/programs/cml>). Undergraduate and graduate degrees will be conferred sequentially, with the BSHS awarded upon completion of 120 credits (nine of which are taken for graduate credit). The MSHS is awarded following completion of an additional 27 credits of graduate coursework.

BSHS in Clinical Management & Leadership

The BSHS with a major in Clinical Management and Leadership is a degree completion program that requires successful completion of **120 credit hours**, divided into three degree components, 60 credits of which must be completed at GW. Up to 60 credits of coursework may be transferable from coursework taken elsewhere.

The following requirements must be fulfilled:

21 credits of general education including:

3 credits of English Composition

6 credits of science*

12 credits of humanities and/or Social Sciences*

*Applicants may complete outstanding coursework through additional Health Sciences Distance Education courses.

39 credits of advanced standing and electives

Academic credit may be awarded for ACE-recognized military courses, as appropriate. Additionally, up to 39 credits of advanced standing may be awarded to graduates of non-college based health programs who present appropriate documentation (e.g. EMT or RN license).

60 credits of health sciences distance education

Requirements for the major:

At least 60 credits of GW coursework including:

Health sciences distance education courses

CML 2140 Mgt of HR in Health Sci Org

CML 2141 Planning&Mktg/Health Sciences

CML 2142 Financial Mgt/Health Sciences

CML 2143	Current Issues/Hlth Sci Mgt
CML 4144	Seminar/Health Sci Leadership
HSCI 2103	Health Policy and the Health Care System
HSCI 2104	Management of Health Science Services
HSCI 2105	Current Issus in Bioethics
HSCI 2107	Health Care in Literature
HSCI 2108	QualityImprovement/HealthCare
HSCI 2109	Trends&Innovations/HealthCare
HSCI 2112W	Writing in the Health Sciences
HSCI 2113	Informatics in the HSci
HSCI 2115	Intro Biostatistics-Health Sci
HSCI 4103	Health Care Law/Regulation
HSCI 4105	Case Studies in Health Care
HSCI 4112W	Rsrch/Wrtng in Health Sciences

Graduate strategic leadership courses

HSCI 6223	Topics -Health Care Leadership
HSCI 6240	Issues & Trends in Health Syst
HSCI 6241	The Health Care Enterprise

MSHS in Clinical Management & Leadership

The MSHS in Clinical Management and Leadership requires successful completion of an additional **27 credit hours** of graduate coursework, including 6 credit hours in research.

Clinical management and leadership courses

CML 6202	Human Resource Development
CML 6203	Health Info Quality & Outcomes
CML 6204	Marketing Clinical Services
CML 6205	CaseStudies/ClinicMgt&Ldrshp
CML 6274	Health Economics and Finance
CML 6275	Ldrshp&Change in Clinical Mgt

Graduate research courses

HSCI 6270	Resear Meth Hlth Prof I
HSCI 6271	Rsch Meth Hlth Prof II

Elective course (one of the following)

HCQ 6201	Building a Quality Culture
HCQ 6202	Health Care Quality Landscape
HCQ 6203	Quality Improvement Science
HCQ 6204	Health Care Quality Analysis
HCQ 6205	Patient Safety Systems
HSCI 6263	Biostatistics Transl Research
HSCI 6264	Epidemiology Translational Res

Credit for HSCI 6223, HSCI 6240, and HSCI 6241 is applied to both the BSHS and MSHS degrees.

Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

DUAL BSHS IN CLINICAL MANAGEMENT & LEADERSHIP AND MSHS IN HEALTH CARE QUALITY

REQUIREMENTS

This multi-level dual degree program (<http://smhs.gwu.edu/crl/programs/cml/curriculum/cml-hcq-dual-degree>) offers academically qualified individuals a seamless and accelerated pathway for completing both the Bachelor of Science in Health Sciences (BSHS) in Clinical Management and Leadership (<http://smhs.gwu.edu/crl/programs/cml>) and the Master of Science in Health Sciences (MSHS) in Health Care Quality (<http://smhs.gwu.edu/crl/programs/health-care-quality>). Undergraduate and graduate degrees will be conferred sequentially, with the BSHS awarded upon completion of 120 credits (nine of which are taken for graduate credit). The MSHS is awarded following completion of an additional 27 credits of graduate coursework.

BSHS in Clinical Management & Leadership

The BSHS with a major in Clinical Management and Leadership is a degree completion program that requires successful completion of **120 credit hours**, divided into three degree components, 60 credits of which must be completed at GW.

Up to 60 credits of coursework may be transferable from coursework taken elsewhere.

The following requirements must be fulfilled:

21 credits of general education including:

3 credits of English Composition

6 credits of science*

12 credits of humanities and/or Social Sciences*

*Applicants may complete outstanding coursework through additional Health Sciences Distance Education courses.

39 credits of advanced standing and electives

Academic credit may be awarded for ACE-recognized military courses, as appropriate. Additionally, up to 39 credits of advanced standing may be awarded to graduates of non-college based health programs who present appropriate documentation (e.g. EMT or RN license).

60 credits of health sciences distance education

Requirements for the major:

At least 60 credits of GW coursework including:

Health Sciences Distance Education Courses

CML 2140	Mgt of HR in Health Sci Org	3
CML 2141	Planning&Mktg/Health Sciences	3
CML 2142	Financial Mgt/Health Sciences	3
CML 2143	Current Issues/Hlth Sci Mgt	3
CML 4144	Seminar/Health Sci Leadership	3
HSCI 2103	Health Policy and the Health Care System	3
HSCI 2104	Management of Health Science Services	3
HSCI 2105	Current Issus in Bioethics	3
HSCI 2107	Health Care in Literature	3
HSCI 2108	QualityImprovement/HealthCare	3
HSCI 2109	Trends&Innovations/HealthCare	3
HSCI 2112W	Writing in the Health Sciences	3
HSCI 2113	Informatics in the HSci	3
HSCI 2115	Intro Biostatistics-Health Sci	3
HSCI 4103	Health Care Law/Regulation	3

HSCI 4105	Case Studies in Health Care	3
HSCI 4112W	Rsrch/Wrtng in Health Sciences	3

Graduate Strategic Leadership Courses

HSCI 6223	Topics -Health Care Leadership	3
HSCI 6240	Issues & Trends in Health Syst	3
HSCI 6241	The Health Care Enterprise	3

MSHS in Health Care Quality

The MSHS in Health Care Quality requires successful completion of an additional **27 credit hours** of graduate coursework, including 6 credit hours in research.

Health Care Quality Courses

HCQ 6201	Building a Quality Culture	3
HCQ 6202	Health Care Quality Landscape	3
HCQ 6203	Quality Improvement Science	3
HCQ 6204	Health Care Quality Analysis	3
HCQ 6205	Patient Safety Systems	3
HCQ 6275	Leadership and Change	3

Graduate Research Courses

HSCI 6270	Resear Meth Hlth Prof I	3
HSCI 6271	Rsch Meth Hlth Prof II	3

Elective Course (one from the following)

CML 6202	Human Resource Development	3
CML 6203	Health Info Quality & Outcomes	3
CML 6204	Marketing Clinical Services	3
CML 6205	CaseStudies/ClinicMgt&Ldrshp	3
HSCI 6263	Biostatistics Transl Research	3
HSCI 6264	Epidemiology Translational Res	3

Credit for HSCI 6223, HSCI 6240, and HSCI 6241 is applied to both the BSHS and MSHS degrees.

Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

DUAL BSHS IN CLINICAL RESEARCH ADMINISTRATION AND MSHS IN REGULATORY AFFAIRS

REQUIREMENTS

Please note the listed curriculum is accurate for Summer 2014. For students admitted after Summer 2014, please refer to the program website for the most current program of study.

This multi-level online dual degree program offers academically qualified individuals a seamless and accelerated pathway for completing both the Bachelor of Science in Health Sciences (BSHS) in Clinical Research Administration (CRA) (<http://smhs.gwu.edu/crl/programs/cra>) and the Master of Science in Health Sciences (MSHS) in Regulatory Affairs (RAFF) (<http://smhs.gwu.edu/crl/programs/regulatory-affairs/curriculum>). Undergraduate and graduate degrees will be conferred sequentially, with the BSHS awarded upon completion of 120 credits (9 of which are taken for graduate credit). The MSHS is awarded following completion of an additional 27 credits of graduate coursework.

BSHS in Clinical Research Administration

The BSHS with a major in Clinical Research Administration is a degree completion program that requires successful completion of **120 credit hours**, divided into three degree components, 60 credits of which must be completed at GW. Up to 60 credits of coursework may be transferable from coursework taken elsewhere.

The following requirements must be fulfilled:

21 credits of general education including:

3 credits of English composition

6 credits of science*

12 credits of humanities and/or Social Sciences*

*Applicants may complete outstanding coursework through additional Health Sciences Distance Education courses.

39 credits of advanced standing and electives

Academic credit may be awarded for ACE-recognized military courses, as appropriate. Additionally, up to 39 credits of advanced standing may be awarded to graduates of non-college based health programs who present appropriate documentation (e.g. EMT or RN license).

60 credits of health sciences distance education

Requirements for the major:

At least 60 credits of GW coursework including:

Health sciences distance education courses

CRA 2101	Basics of Clinical Research
CRA 2102	Processes of Clinical Research
CRA 2103	Good Clinical Practices
CRA 2104	Business of Clinical Research
CRA 2105	Topics in Clinical Research
CRA 2107	Intro Monitoring Clin. Trials
HSCI 2103	Health Policy and the Health Care System
HSCI 2104	Management of Health Science Services
HSCI 2105	Current Issues in Bioethics
HSCI 2107	Health Care in Literature
HSCI 2108	Quality Improvement/Health Care
HSCI 2112W	Writing in the Health Sciences
HSCI 2113	Informatics in the HSci
HSCI 2115	Intro Biostatistics-Health Sci
HSCI 4103	Health Care Law/Regulation
HSCI 4105	Case Studies in Health Care
HSCI 4112W	Research/Writing in Health Sciences

Graduate strategic leadership courses

HSCI 6223	Topics -Health Care Leadership
HSCI 6240	Issues & Trends in Health Syst
HSCI 6241	The Health Care Enterprise

MSHS in Regulatory Affairs

The MSHS in Regulatory Affairs requires successful completion of an additional **27 credit hours** of graduate coursework, including 6 credit hours in research.

Regulatory affairs courses

RAFF 6201	Introduction to Global Regulatory Affairs
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RAFF 6202	Regulatory Drug Biologics
RAFF 6203	Regulatory Device Diagnostics
RAFF 6204	Clinical Research for Regulatory Affairs
RAFF 6205	Regulatory Affairs Compliance
RAFF 6275	Leadership in Regulatory Affairs

Graduate research courses

HSCI 6263	Biostatistics Transl Research
HSCI 6271	Rsch Meth Hlth Prof II

Elective course (one from the following)

CRA 6203	Partnerships w/Human Subjects
CRA 6208	International Clinical Rsrch
CRA 6209	Monitoring Clinical Research
CRA 6210	Medical Writing/Clinical Rsrch
HCQ 6201	Building a Quality Culture
HSCI 6223	Topics -Health Care Leadership
HSCI 6264	Epidemiology Translational Res

Credit for HSCI 6240, HSCI 6241, and HSCI 6270 is applied to both the BSHS and MSHS degrees.

Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere. For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a grade of C or better (C- grades do not transfer)

DUAL BSHS IN EMERGENCY HEALTH SERVICES MANAGEMENT AND MSHS IN CLINICAL MANAGEMENT AND LEADERSHIP

REQUIREMENTS

Emergency Medical Services Management (<http://smhs.gwu.edu/crl/programs/ems>) students study up-to-date information on issues, theories and practices in emergency

medicine, and investigate emergency service's role among other medical disciplines. Most courses have an applied project where the student role play as managers or administrators and handle a complex current issue. Students take core courses in the health sciences covering issues, trends and topics in health care systems, enterprises and leadership. Emergency Medical Services Leadership coursework focuses on response to high-impact emergencies, analysis of systems, the legal, regulatory and public information aspects of emergency management and strategic emergency management.

This multi-level dual degree program offers academically qualified individuals a seamless and accelerated pathway for completing both the Bachelor of Science in Health Sciences (BSHS) in Emergency Medical Services Management and the Master of Science in Health Sciences (MSHS) in either Clinical Management and Leadership or Emergency Medical Services Leadership (beginning in Summer/Fall 2014).

MINOR IN ANATOMY

The Department of Anatomy and Regenerative Biology (<http://smhs.gwu.edu/anatomy>) in the School of Medicine and Health Sciences (<http://smhs.gwu.edu>) offers courses that pertain to the 12-credit minor in human anatomy that is available to undergraduates across the University:

ANAT 2130	Human Embryology
ANAT 2150	Human Microscopic Anatomy
ANAT 2160	Human Functional Neuroanatomy
ANAT 2181	Human Gross Anatomy

MINOR IN BIOCHEMISTRY

The Department of Biochemistry and Molecular Medicine (<http://smhs.gwu.edu/biochemistry>) in the School of Medicine and Health Sciences (<http://smhs.gwu.edu>) offers courses that pertain to the 12-credit minor in biochemistry that is available to undergraduates across the University:

BIOC 3261	Introductory Medical Biochemistry
BIOC 3262	Biochemistry Laboratory
BIOC 3263	Special Topics in Biochemistry
BIOC 3560	Diet, Health, and Longevity
BIOC 3564	Lipid Biotechnology
BIOC 3820	Bioinformatics and Computational Biochemistry
BIOC 3821	Projects in Biomed Informatics
BIOC 4195	Undergraduate Research

BIOC 4701 Science and Medicine

BISC 3209 Molecular Biology

MINOR IN CLINICAL RESEARCH ADMINISTRATION

REQUIREMENTS

Students must complete the required coursework with a 2.5 GPA or better. The minor requires successful completion of 15 credit hours:

Foundation Courses

CRA 2101 Basics of Clinical Research

CRA 2102 Processes of Clinical Research

CRA 2103 Good Clinical Practices

HSCI 2105 Current Issues in Bioethics

Electives (choose one with advisor approval)

CRA 2104 Business of Clinical Research

HSCI 2103 Health Policy and the Health Care System

MINOR IN EMERGENCY HEALTH SERVICES

REQUIREMENTS

The minor in Emergency Health Services requires successful completion of at least 15 or 16 credit hours in two areas. Students must complete the required coursework with a 2.5 GPA or better.

Foundation Courses

EHS 1040 Emergency Medical Tech-Basic 3

EHS 1041 EMT - Basic Lab 1

EHS 2166 Current Topics 1

EHS 2174 Foundations of Emergency Health Services Systems 3

EHS 2175 Community Risk Management and Safety in EHS 3

For students who already have EMT-Basic Certification, an elective can be used to replace EHS 1040 and EHS 1041 requirement; the student needs a minimum of 4 additional

elective credits to account for the waiver of EHS 1040 and 1041. Please contact the program office for more information.

Electives (four or five credits from the following)

EHS 1002 CPR & First Aid 1

EHS 2107 Theory&Prac ofRsch/ClinclSetng 4

EHS 2108 Emergency Med Clinical Scribe 3

EHS 2110 EmergDeptCritCareAsses&Proced. 4

EHS 2162 Intro Princpls/Tactical Med 4

EHS 2211 Intro to Telemedicine 3

EHS 4110 Operations Mgt in EHS Systems 3

EHS 4112 Special Ops and Disaster Mgt 3

MINOR IN HEALTH SCIENCES

REQUIREMENTS

Students must successfully complete 15 credits of approved, health sciences courses. Students must complete the required coursework with a 2.5 GPA or better.

Foundation

HSCI 2101 Psychosocial Aspects of Health and Illness

HSCI 2102 Pathophysiology

HSCI 2103 Health Policy and the Health Care System

HSCI 2105 Current Issues in Bioethics

Electives

Chosen with academic advisor. HSCI 4103 has a prerequisite of HSCI 2103. HSCI 4105 has a prerequisite of HSCI 2105.

HSCI 4103 Health Care Law/Regulation

or HSCI 4105 Case Studies in Health Care

GRADUATE PROGRAMS

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CLINICAL MANAGEMENT AND LEADERSHIP

REQUIREMENTS

The MSHS in Clinical Management and Leadership (<http://smhs.gwu.edu/crl/programs/cml>) requires successful completion of 36 credits, including: 6 credits of research coursework, 9 credits of strategic leadership courses, 18 credits in the field of clinical management and leadership, and 3 credits of elective.

Requirements for the program:

6 credits of graduate research courses

HSCI 6270 Resear Meth Hlth Prof I

HSCI 6271 Rsch Meth Hlth Prof II

9 credits of strategic leadership courses

HSCI 6223 Topics -Health Care Leadership

HSCI 6240 Issues & Trends in Health Syst

HSCI 6241 The Health Care Enterprise

18 credits of clinical management & leadership courses

CML 6202 Human Resource Development

CML 6203 Health Info Quality & Outcomes

CML 6204 Marketing Clinical Services

CML 6205 CaseStudies/ClinicMgt&Ldrshp

CML 6274 Health Economics and Finance

CML 6275 Ldrshp&Change in Clinical Mgt

3 credits of an elective course

HCQ 6201 Building a Quality Culture

HCQ 6202 Health Care Quality Landscape

HCQ 6203 Quality Improvement Science

HCQ 6204 Health Care Quality Analysis

HCQ 6205 Patient Safety Systems

HSCI 6263 Biostatistics Transl Research

HSCI 6264

Epidemiology Translational Res

Transfer credits

Up to six credits of previously earned graduate-level coursework may be accepted as transfer credit. Contact the program office for the full policy and guidelines.

Official transfer credit evaluations are conducted only for admitted students.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CLINICAL MICROBIOLOGY

REQUIREMENTS

The Master of Science in Health Sciences in the field of clinical microbiology (<http://smhs.gwu.edu/crl/programs/mls>) requires the completion of 36 credits of graduate work. This online program provides students with clinical microbiology and laboratory science coursework, a hands-on microbiology practicum that will prepare students for a diagnostic microbiology laboratory position, and eligibility for national certification examinations in clinical microbiology. The program includes additional graduate coursework to prepare students for careers in research institutions, public health laboratories, biotechnology firms, pharmaceutical companies, or governmental agencies.

Requirements for the program:

MLS 4118 Laboratory Operations

MLS 6114 Advanced Clinical Microbiology I

MLS 6115 Advanced Clinical Parasitology and Mycology

MLS 6124 Advanced Clinical Microbiology II

MLS 6140 Advanced Laboratory Management

MLS 6141 Advanced Immunology and Serology

MLS 6151 Advanced Molecular Diagnostics

MLS 4164 ClinicalMicrobiology Practicum

HSCI 6263 Biostatistics Transl Research

HSCI 6264 Epidemiology Translational Res

MLS 6244 Research Ethics & Integrity

MLS 6216 Microbial Pathogenesis

MLS 6217 Medical Biotechnology

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CLINICAL RESEARCH ADMINISTRATION

REQUIREMENTS

The MSHS in the Clinical Research Administration (CRA (<http://smhs.gwu.edu/crl/programs/cra>)) requires successful completion of **36 credits**, including: 18 credits in the field of CRA, 9 credits of strategic leadership courses, 6 credits of graduate research coursework, and a 3 credit elective.

Requirements for the program:

Clinical research administration courses

CRA 6201	Critical Analysis Clin Rsch
CRA 6202	Clinical Trials Management
CRA 6203	Partnerships w/Human Subjects
CRA 6204	The Clinical Research Industry
CRA 6210	MedicalWriting/ClinicalResrch
CRA 6275	Ldrshp&Change in ClinRschrAdmin

Strategic leadership courses

HSCI 6223	Topics -Health Care Leadership
HSCI 6240	Issues & Trends in Health Syst
HSCI 6241	The Health Care Enterprise

Graduate research courses

HSCI 6270	Resear Meth Hlth Prof I
HSCI 6271	Rschr Meth Hlth Prof II

Elective course (one from the following)

CRA 6208	International Clinical Rschr
CRA 6209	Monitoring Clinical Research
HCQ 6201	Building a Quality Culture
HSCI 6263	Biostatistics Transl Research
HSCI 6264	Epidemiology Translational Res

Transfer credits

Up to six credits of previously earned graduate-level coursework may be accepted as transfer credit. Please contact the program office for the full policy and guidelines.

Official transfer credit evaluations are conducted only for admitted students.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CLINICAL AND TRANSLATIONAL RESEARCH

REQUIREMENTS

The Master of Science in Health Sciences in the field of clinical and translational research (<http://smhs.gwu.edu/crl/programs/ctr>) is 36 credits:

- The core, 27 credit program designed to build researchers' necessary competencies in the field of translational research.
- Elective courses (9 credits) drawn from the four domains of basic and biomedical sciences, clinical research and administration, community health research, and health services research and policy. Students will choose their courses in consultation with an academic advisor.

Requirements for the program:

6 credits of clinical research courses

CRA 6201	Critical Analysis Clin Rsch
CRA 6205	Clinical Investigation

9 credits of graduate research courses

HSCI 6263	Biostatistics Transl Research
HSCI 6264	Epidemiology Translational Res
HSCI 6273	Bioinformatics for Genomics

12 credits of translational research courses

HSCI 6261	Fdtn in Clinical/Trans.Rschr
HSCI 6262	Transdisciplinary Sem/Pract.
HSCI 6265	Grantsmanship in Trans Res
HSCI 6275	Transdisciplinary Rschr Prop.

9 credits of electives (choose three)

Chosen with academic advisor

Transfer credits

Up to six credit hours of previously earned graduate-level coursework may be accepted as transfer credit. Please contact the program office for the full policy and guidelines.

Official transfer credit evaluations are conducted only for admitted students.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF EMERGENCY MEDICAL SERVICES LEADERSHIP

REQUIREMENTS

Please note the curriculum is accurate for Summer 2014. For students admitted after Summer 2014, please refer to the program website (<http://smhs.gwu.edu/crl/programs/ems/curriculum/mshs-emsl>) for the most current program of study.

The Master of Science in Health Sciences in the field of emergency medical services leadership (<http://smhs.gwu.edu/crl/programs/ems>) requires successful completion of 36 credits, including 6 credits of research coursework, 9 credits of strategic leadership courses, and 21 credits in the field of emergency medical services.

Requirements for the program:

Graduate research courses

HSCI 6263 Biostatistics Transl Research

HSCI 6264 Epidemiology Translational Res

Strategic leadership courses

HSCI 6223 Topics -Health Care Leadership

HSCI 6240 Issues & Trends in Health Syst

HSCI 6241 The Health Care Enterprise

Emergency medical services courses

EHS 6201 Response /High Impact Emergenc

EHS 6203 Legal&RegltryOblig/Emer Svcs

EHS 6210 EMS Systems Design and Analysis

EHS 6212 Teaching Strategies in the Health Professions

EHS 6213 Curriculum Development in the Health Professions

EHS 6274 Health Economics and Finance

EHS 6275

Ldrshp&Change/EmergSvcsMgt

Transfer credits

Up to six credit hours of previously earned graduate-level coursework may be accepted as transfer credit. Please contact the program office for the full policy and guidelines.

Official transfer credit evaluations are conducted only for admitted students.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF HEALTH CARE QUALITY

REQUIREMENTS

Please note the listed curriculum is accurate for Summer 2014. Students admitted after Summer 2014 should refer to the program website for the most current program of study.

The Master of Science in Health Sciences in the field of health care quality (<http://smhs.gwu.edu/crl/programs/health-care-quality>) requires successful completion of 36 credits, including: 6 credits of research coursework, 9 credits of strategic leadership courses, 18 credits in the field of health care quality, and 3 credits of a clinical management and leadership elective.

Requirements for the program:

Graduate research courses

HSCI 6270 Resear Meth Hlth Prof I

HSCI 6271 Rsch Meth Hlth Prof II

Strategic leadership courses

HSCI 6223 Topics -Health Care Leadership

HSCI 6240 Issues & Trends in Health Syst

HSCI 6241 The Health Care Enterprise

Health care quality courses

HCQ 6201 Building a Quality Culture

HCQ 6202 Health Care Quality Landscape

HCQ 6203 Quality Improvement Science

HCQ 6204 Health Care Quality Analysis

HCQ 6205 Patient Safety Systems

HCQ 6275 Leadership and Change

Elective course

One from the following

CML 6202 Human Resource Development

CML 6203 Health Info Quality & Outcomes

CML 6204 Marketing Clinical Services

CML 6205 CaseStudies/ClinicMgt&Ldrshp

HSCI 6263 Biostatistics Transl Research

HSCI 6264 Epidemiology Translational Res

Transfer credits

Up to six credits of previously earned graduate-level coursework may be accepted as transfer credit. Contact the program office for the full policy and guidelines.

Official transfer credit evaluations are conducted only for admitted students.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF IMMUNOHEMATOLOGY

REQUIREMENTS

Mission

The primary goal of the Master of Science in Health Sciences in the field of Immunohematology (<http://smhs.gwu.edu/crl/programs/military/immunohematology>) is to provide Blood Banking Specialists with an advanced degree. Our mission is to:

- Provide graduate courses in immunohematology through distance learning
- Facilitate the development of research skills
- Foster research in the area of immunohematology

Coursework

This degree program incorporates aspects of transfusion medicine at the graduate level with research methods, current topics in transfusion medicine, immunology, and molecular biology, as well as research in an area of immunohematology that culminates in a research project. Students pursuing the degree are required to complete 22 credit hours of online and research coursework.

Required Coursework

MLS 6201 Advanced Clinical Biochemistry 3

MLS 6210 Clinicl Immun:Prin & Lab Diag 4

MLS 6213 Seminar in Immunohematology 2

MLS 6215 Research Project 3

HSCI 6241 The Health Care Enterprise 3

HSCI 6270 Resear Meth Hlth Prof I 3

HSCI 6297 Indpendnt Study/Health Profess 1-5

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF MEDICAL LABORATORY SCIENCE

REQUIREMENTS

The Master of Science in Health Sciences in the field of medical laboratory science (MLS) (<http://smhs.gwu.edu/crl/programs/mls>) consists of 36 credits, including 15 credits in the field of medical laboratory science and a mentored research project, 6 credits of strategic leadership courses, 12 credits of graduate research coursework, and 3 credits of an elective.

Requirements for the program:

Medical laboratory science courses

MLS 6242 Molecular Pathology

MLS 6243 Education & Assessment in MLS

MLS 6244 Research Ethics & Integrity

MLS 6245 Current Topics in MLS

MLS 6246 Capstone Project

Strategic leadership courses

HSCI 6223 Topics -Health Care Leadership

HSCI 6241 The Health Care Enterprise

Graduate research courses

HSCI 6263 Biostatistics Transl Research

HSCI 6264 Epidemiology Translational Res

HSCI 6270 Resear Meth Hlth Prof I

HSCI 6271 Rsch Meth Hlth Prof II

Elective course

Course selected, in consultation with program advisor, from existing online graduate courses in Medical Laboratory Sciences, Clinical Management and Leadership, Health Care Quality, Regulatory Affairs and Clinical Research Administration.

Transfer credits

Up to six credits of previously earned graduate-level coursework may be accepted as transfer credit. Contact the program office for the full policy and guidelines.

Official transfer credit evaluations are conducted only for admitted students.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF MOLECULAR DIAGNOSTIC SCIENCE

REQUIREMENTS

The **Master of Science in Health Sciences (MSHS) in Molecular Diagnostic Science** consists of 36 credit hours, including 27 hours of MLS coursework to develop a foundational understanding of molecular biology and biotechnology and to apply this knowledge through an internship or mentored research project, 3 credit hours of quantitative data analysis, 3 credits of leadership concepts in a clinical setting, and 3 credit hours in ethical implications and research.

Requirements for the program:

MLS 4118	Laboratory Operations
MLS 6141	Advanced Immunology and Serology
MLS 6219	Molecular Biology
MLS 6218	Genetics
MLS 6216	Microbial Pathogenesis
MLS 6242	Molecular Pathology
MLS 6217	Medical Biotechnology
HSCI 6263	Biostatistics Transl Research
MLS 6140	Advanced Laboratory Management
MLS 6244	Research Ethics & Integrity
MLS 6166	Molecular Diagnostics Practicum *
MLS 6245	Current Topics in MLS

MLS 6246

Capstone Project

* May be substituted with an elective for students with current clinical molecular laboratory experience.

The **MSHS in Molecular Diagnostic Science** prepares students with the theoretical knowledge and practical skills for positions in diagnostic clinical laboratories, public health laboratories, biotechnology companies, government agencies, law enforcement agencies, and research institutes. In addition, students who complete this program will be eligible to take the Molecular Biology Board of Certification examination offered by the American Society for Clinical pathology (ASCP). The curriculum will also ensure that graduates will be prepared to pursue an advanced degree beyond the Master's level if they so choose.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF PHYSICIAN ASSISTANT

REQUIREMENTS

Master of Science in Health Sciences physician assistant program (<http://smhs.gwu.edu/pas>) focuses on preparing health professionals who will extend and complement the capabilities of physicians in the delivery of health care. The curriculum emphasizes a scholarly approach to medicine, development of organizational and critical-thinking skills, and evidence-based medicine.

All courses listed are required for students entering in May 2014. Students entering after May 2014 should check the program website (<http://smhs.gwu.edu/pas/program>).

Year 1, Semester 1 (Academic)

ANAT 6215	Anatomy-Health Sci Students
BIOC 6211	Biochem-Health Sci Students
PA 6270	Found Evidence Based Practice
PA 6210	Health, Justice & Society I
PA 6234	Clinical Assessment
PA 6219	Role of PA in Amer Health Care
PA 6240	Integration Clin Concepts I

Year 1, Semester 2 (Academic)

PHYL 6211	Physiology for Health Sci Std
PA 6229	Human Behavior
PA 6237	Med Microbiology & Infect Dise

PA 6241	Integration Clin Concepts II
HSCI 6233	Pathology-Hlth Sci Students I
PHAR 6207	Basic Principles of Pharmacol.
PA 6211	Health, Justice & Society II
PA 6225	Clinical Medicine
PA 6230	Clinical Skills I

Year 1, Semester 3 (Academic)

HSCI 6234	Pathology-Hlth Sci Students II
PHAR 6208	Pharm in Dis. Pathophysiology
PA 6226	Clinical Medicine II
PA 6271	Clin Apps Evidence Base Prac
PA 6242	Integration Clin Concepts III
PA 6231	Clinical Skills II

Year 2, Semesters 4 - 6 (Clinical)

Required Courses - Clinical Year	
PA 6261	Inpatient Med Clinical Practic
PA 6262	Ambul Care Clinical Practicum
PA 6263	Surg Inpatient Clinical Practi
PA 6264	Women's Health Clin Pract
PA 6265	Pediatrics Clinical Practicum
PA 6266	Emergency Medicine Clinical Pr
PA 6267	Behav Med Clin Pract
PA 6268	Elective Clinical Practicum I
PA 6269	Final Clinical Practicum

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF REGULATORY AFFAIRS

REQUIREMENTS

Please note the curriculum is accurate for Summer 2014. For students admitted after Summer 2014, please refer to the program website (<http://smhs.gwu.edu/crl/programs/regulatory-affairs>) for the most current program of study.

The Master of Science in Health Sciences in the field of Regulatory Affairs (RAFF) requires successful completion of 36 credits, including: 9 credits of the research coursework, 6 credits of strategic leadership courses, 18 credits in the field of regulatory affairs, and 3 credits of an elective.

Requirements for the program:

Regulatory affairs courses

RAFF 6201	Introduction to Global Regulatory Affairs
RAFF 6202	Regulatory Drug Biologics
RAFF 6203	Regulatory Device Diagnostics
RAFF 6204	Clinical Research for Regulatory Affairs
RAFF 6205	Regulatory Affairs Compliance
RAFF 6275	Leadership in Regulatory Affairs

Graduate research courses

HSCI 6263	Biostatistics Transl Research
HSCI 6270	Resear Meth Hlth Prof I
HSCI 6271	Rsch Meth Hlth Prof II

Strategic leadership courses

HSCI 6240	Issues & Trends in Health Syst
HSCI 6241	The Health Care Enterprise

Elective course

CML 6274	Health Economics and Finance
CRA 6203	Partnerships w/Human Subjects
CRA 6208	International Clinical Rsrch
CRA 6209	Monitoring Clinical Research
CRA 6210	Medical Writing/Clinical Rsrch
HCQ 6201	Building a Quality Culture
HSCI 6223	Topics -Health Care Leadership
HSCI 6264	Epidemiology Translational Res (recommended)

Transfer credits

Up to six credits of previously earned graduate-level coursework may be accepted as transfer credit. Contact the program office for the full policy and guidelines.

Official transfer credit evaluations are conducted only for admitted students.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF TRANSLATIONAL MICROBIOLOGY

REQUIREMENTS

The Master of Science in Health Sciences in the field of translational microbiology consists of 36 credit hours, including 18 hours of MLS coursework to develop a foundational understanding of microbiological sciences and to apply this knowledge through a mentored research project, 12 credit hours of quantitative data analysis, 3 credits of strategic leadership concepts, and 3 credit hours in ethical implications and research.

Requirements for the program:

HSCI 6263	Biostatistics Transl Research
HSCI 6264	Epidemiology Translational Res
HSCI 6270	Resear Meth Hlth Prof I
HSCI 6271	Rsch Meth Hlth Prof II
MLS 6245	Current Topics in MLS
MLS 6246	Capstone Project
MLS 6244	Research Ethics & Integrity
MLS 6216	Microbial Pathogenesis
MLS 6115	Advanced Clinical Parasitology and Mycology
MLS 6217	Medical Biotechnology
MLS Elective (6) ***	

Students choose one of the following: 3 credits

HSCI 6241	The Health Care Enterprise
HSCI 6223	Topics -Health Care Leadership
HSCI 6240	Issues & Trends in Health Syst

*** MLS elective courses will be chosen by the student after consultation with and approval by the Program Director.

The MSHS in Translational Microbiology prepares students with the theoretical knowledge and practical skills for research positions in public health microbiology laboratories, biotechnology companies, government agencies and research institutes. By completing course work from various programs within Health Sciences, students will gain a working knowledge of both basic and clinical aspects of infectious disease and will graduate with the credentials needed to work in a clinical, basic or applied research setting. The curriculum will also ensure that graduates will be prepared to pursue an advanced degree beyond the Master's level if they so choose.

JOINT MSHS IN THE FIELD OF PHYSICIAN ASSISTANT AND MPH IN COMMUNITY-ORIENTED PRIMARY CARE

REQUIREMENTS

Applicants with a strong interest in public health may want to consider the joint PA/MPH progra (<http://smhs.gwu.edu/pas/program/curriculum/mshs-mph>)m. This unique three-year program provides both clinical and academic preparation for careers in medicine and public health. Students in this curriculum receive advanced training in the design of health studies, epidemiological methods, application of computers to public health, community medicine, and techniques of health promotion. Students in this program also design a special research project in collaboration with faculty of the Milken Institute School of Public Health and local, national, or international public health organizations.

PA-MSHS/MPH Community-Oriented Primary Care Curriculum

All listed courses are required.

Year 1, Summer Semester

PUBH 6002	Biostatistical Applic for PubH *
PUBH 6003	Prin & Practice/Epidemiology *
PUBH 6007	Social&BehaviorAppr-Pub.Hlth *
PUBH 6591	PA/MPH Clin Leadership Seminar
BIOC 6211	Biochem-Health Sci Students

Year 1, Fall Semester

PUBH 6004	Env/Occ Hlth-Sustainable World *
PUBH 6510	COPC Principles and Practice *

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6514	Preventing Health Disparities
PUBH 6500	Planning and Implementing Health Promotion Programs *
PHYL 6211	Physiology for Health Sci Std
PUBH 6006	Mgt & Policy Approaches to PH

Year 1, Spring Semester

PUBH 6014	Practicum
PUBH 6512	Comm-Oriented Primry Care Pol & Iss *
PUBH 6513	Community Health Management
PUBH 6501	Eval-Hlth Prom Disease Prev Prgms *
PUBH 6516	Community Health Info Resources
PUBH 6502	Practical Data Analysis: PCH
PUBH 6504	Social and Behavioral Science Research Methods

Year 2, Summer Semester

ANAT 6215	Anatomy-Health Sci Students
PA 6210	Health, Justice & Society I
PA 6219	Role of PA in Amer Health Care
PA 6234	Clinical Assessment
PA 6240	Integration Clin Concepts I

Year 2, Fall Semester

HSCI 6233	Pathology-Hlth Sci Students I
PA 6211	Health, Justice & Society II
PA 6225	Clinical Medicine
PA 6229	Human Behavior
PA 6230	Clinical Skills I
PA 6237	Med Microbiology & Infect Dis
PA 6241	Integration Clin Concepts II
PHAR 6207	Basic Principles of Pharmacol.
PUBH 6503	Intro to Pub Hlth Commnctn & Mktg

Year 2, Spring Semester

HSCI 6234	Pathology-Hlth Sci Students II
PA 6226	Clinical Medicine II
PA 6231	Clinical Skills II
PA 6241	Integration Clin Concepts II
PA 6271	Clin Apps Evidence Base Prac
PHAR 6208	Pharm in Dis. Pathophysiology

* PUBH Core Course

Community Oriented Primary Care (COPC) is the most common track for students in the joint PA/MPH program, but students may choose to take any of the other MPH tracks offered. If choosing a track other than COPC, the courses shown in the curriculum above may vary. Students will need to ensure their MPH courses can align with their PA studies.

Information on other tracks can be found at the Milken Institute School of Public Health (<http://publichealth.gwu.edu/academics/graduate/masters-programs>).

DOCTOR OF PHYSICAL THERAPY REQUIREMENTS

The DPT Program provides quality graduate education committed to developing generalist practitioners who are: reflective practitioners, who think critically and use best evidence to effectively solve problems; compassionate practitioners, who demonstrate excellence in communication and interpersonal skills, a respect for individual and cultural differences and the core values of the profession; and dedicated practitioners who value the tenets of lifelong learning.

The curriculum consists of 109 credits of professional course work requiring thirty-three months of full-time study beginning in the fall semester. It combines content from the foundational sciences, behavioral sciences, clinical sciences, professional practice expectations, practice management expectations, and critical inquiry. Students develop the skills needed to examine, evaluate, diagnose, prognose, develop a plan of care and implement and re-evaluate that plan of care for patients with dysfunction in the cardiopulmonary, musculoskeletal, neuromotor and integumentary systems across the lifespan.

The curriculum is built on the overarching principles of integration and application. Information is integrated and applied through a series of integrative units using "standardized patients" and Simulation Experiences. Clinical experiences are introduced early in the curriculum in the second and fourth semesters. Three full-time clinical internships occur in semesters six, seven, and eight for a total of 34

weeks of full time clinical experience. Internships are located regionally, nationally, and internationally providing depth and breadth to each student's unique educational experience.

Program of Study

Fall I Semester I

PT 8201	Functional Anatomy
PT 8311	Foundations of Examination
PT 8312	Foundations of Interventions
PT 8351	Professional Issues in Physical Therapy Health Care Management I
PT 8361	Clinical Conference I

Spring I Semester II

PT 8202	Applied Physiology
PT 8313	Therapeutic Modalities
PT 8352	Teaching in Physical Therapy Practice
PT 8203	Neuroscience in Rehabilitation I
PT 8271	Research in Practice
PT 8362	Clinical Conference II
PT 8483	Integrated Clinical Experience I
PT 8204	Movement Science I

Summer I Semester III

PT 8205	Movement Science II
PT 8206	Neuroscience in Rehabilitation II
PT 8207	Clinical Medicine and Pharmacology
PT 8363	Clinical Conference III
PT 8481	Interprofessional Community Practicum

Fall II Semester IV

PT 8315	Management of Musculoskeletal Dysfunction I
PT 8208	Medical Imaging
PT 8318	Management of Neuromotor Dysfunction
PT 8323	Prosthetics & Orthotics
PT 8364	Clinical Conference IV

PT 8272 Research Seminar

PT 8484 Integrated Clinical Experience II

Spring II Semester V

PT 8316	Management of Musculoskeletal Dysfunction II
PT 8320	Management of the Pediatric Client
PT 8322	Management of the Aging Adult
PT 8314	Management of Cardiopulmonary Dysfunction
PT 8317	Management of Integumentary Dysfunction
PT 8365	Clinical Conference V

Summer II Semester VI

PT 8491	Clinical Internship I
PT 8366	Clinical Conference VI
PT 8321	Women's Health

Fall III Semester VII

PT 8492	Clinical Internship II
PT 8355	Professional Issues in Physical Therapy Health Care Management II
PT 8357	Capstone Seminar
PT 8356	Health Promotion and Wellness

Spring III Semester VIII

PT 8493	Clinical Internship III
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Full-time physical therapy clinical experience in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from advanced beginner to entry-level performance in the management of patients with non-complex problems across the life span.

CERTIFICATE PROGRAMS

GRADUATE CERTIFICATE IN HEALTH CARE QUALITY

REQUIREMENTS

Please note the curriculum is accurate for Summer 2014. For students admitted after Summer 2014, please refer to the program website (<http://smhs.gwu.edu/crl/programs/health-care-quality/curriculum>) for the most current program of study.

The graduate certificate in health care quality requires successful completion of 18 credits, including: 3 credits of a professional core course and 15 credits in the field of health care quality.

All semester credits earned in this program are transferable to the Master of Science in Health Sciences program in Health Care Quality.

Requirements for the program:

HCQ 6200	Introduction to Health Care Quality
HCQ 6201	Building a Quality Culture
HCQ 6202	Health Care Quality Landscape
HCQ 6203	Quality Improvement Science
HCQ 6204	Health Care Quality Analysis
HCQ 6205	Patient Safety Systems

GRADUATE CERTIFICATE IN REGULATORY AFFAIRS

REQUIREMENTS

The curriculum listed below is accurate for the Summer 2014 semester. Students who are admitted after Summer 2014 should refer to the program website (<http://smhs.gwu.edu/crl/programs/regulatory-affairs/curriculum/#certificate>) for the most current program of study.

Required: 18 credits

Required courses for the certificate:

15 credits of regulatory affairs courses including:

RAFF 6201	Introduction to Global Regulatory Affairs
RAFF 6202	Regulatory Drug Biologics
RAFF 6203	Regulatory Device Diagnostics
RAFF 6204	Clinical Research for Regulatory Affairs

RAFF 6205 Regulatory Affairs Compliance

3 credits of graduate research

HSCI 6263 Biostatistics Transl Research

All credits earned in this program are transferable to the Master of Science in Health Sciences in the field of Regulatory Affairs.

GRADUATE CERTIFICATE IN THE FIELD OF CLINICAL RESEARCH ADMINISTRATION

REQUIREMENTS

Students in the Graduate Certificate in Clinical Research Administration (CRA) (<http://smhs.gwu.edu/crl/programs/cra>) program must successfully complete **15 credits** in CRA, and a **3 credit elective**.

All courses in this program are transferable to Master of Science in Health Sciences (MSHS) in CRA.

Requirements for the program:

Clinical research administration courses

CRA 6201	Critical Analysis Clin Rsch
CRA 6202	Clinical Trials Management
CRA 6203	Partnerships w/Human Subjects
CRA 6204	The Clinical Research Industry
CRA 6210	MedicalWriting/ClinicalResrch

Elective course (one from the following)

CRA 6208	International Clinical Rsrch
CRA 6209	Monitoring Clinical Research
HCQ 6201	Building a Quality Culture
HSCI 6263	Biostatistics Transl Research
HSCI 6264	Epidemiology Translational Res

GRADUATE CERTIFICATE IN THE FIELD OF CLINICAL RESEARCH PRACTICE

REQUIREMENTS

The graduate certificate in Clinical Research Practice capitalizes on the foundational courses of clinical research, health informatics, epidemiology, and biostatistics to prepare the

graduate with the requisite knowledge and skills to conduct clinical research in collaboration with sponsored research programs.

The program of study has been drawn from the core program of study of the MSHS program (<http://smhs.gwu.edu/crl/programs/ctr/curriculum/mshs>).

Requirements for the program:

6 credits of clinical research courses

CRA 6201 Critical Analysis Clin Rsch

CRA 6205 Clinical Investigation

HSCI 6263 Biostatistics Transl Research

9 credits of graduate research courses

HSCI 6264 Epidemiology Translational Res

HSCI 6273 Bioinformatics for Genomics

3 credits of elective (choose one)

Chosen with academic advisor

GRADUATE CERTIFICATE IN THE FIELD OF CLINICAL AND TRANSLATIONAL RESEARCH REQUIREMENTS

The graduate certificate in Clinical and Translational Research has been designed to meet the professional development needs of researchers who cannot make the time commitment needed to fulfill the requirements of the full master's degree program. All courses from the graduate certificate are transferable into the MSHS program (<http://smhs.gwu.edu/crl/programs/ctr/curriculum/mshs>).

The program of study has been drawn from the core program of study of the MSHS program (<http://smhs.gwu.edu/crl/programs/ctr/curriculum/mshs>).

Requirements for the program:

6 credits of clinical research courses

CRA 6201 Critical Analysis Clin Rsch

CRA 6205 Clinical Investigation

12 credits of translational research courses

HSCI 6261 Fdtn in Clinical/Trans.Rsrch

HSCI 6262 Transdisciplinary Sem/Pract.

HSCI 6265 Grantsmanship in Trans Res

HSCI 6275 Transdisciplinary Rsrch Prop.

3 credits of electives selected with academic advisor

POST-BACCALAUREATE CERTIFICATE IN THE FIELD OF BLOOD BANKING FOR MEDICAL LABORATORY SCIENCE REQUIREMENTS

The post-baccalaureate certificate in blood banking for medical laboratory science (MLS) requires completion of 17 credits of coursework. Completion of the certificate qualifies the graduate to take the Technologist in Blood Banking examination offered by national certifying agencies.

Admitted students complete required courses either on a part-time or full-time basis. Courses in the major are designed to broaden the student's foundation in the sciences in preparation for the clinical phase of the program. All courses are taught online, with the exception of the clinical practica.

The clinical practica are usually taken on a full-time basis upon completion of didactic coursework. Students are typically in a clinical laboratory eight hours per day (daytime hours), five days per week. Admitted students must be able to fulfill the necessary time requirement for the practica.

Required coursework for the certificate:

MLS 4118 Laboratory Operations

MLS 4140 Clinical Laboratory Mgt

MLS 4141 Immunology and Serology

MLS 4150 Immunohematology

MLS 4151 Molecular Diagnostics

MLS 4160 Blood Bank Practicum

MLS 4163 Immunology and Serology Practicum

Clinical rotations, lasting between one to four weeks each, are completed at an approved clinical site. They may vary in length.

POST-BACCALAUREATE CERTIFICATE IN THE FIELD OF CHEMISTRY FOR MEDICAL LABORATORY SCIENCE

REQUIREMENTS

The post-baccalaureate certificate in chemistry for medical laboratory science (MLS) requires completion of 19 credits. Completion of the certificate qualifies the graduate to take the Technologist in Chemistry examination offered by national certifying agencies.

Admitted students complete required courses either on a part-time or full-time basis. Courses in the major are designed to broaden the student's foundation in the sciences in preparation for the clinical phase of the program. All courses are taught online, with the exception of the clinical practicum.

The clinical practicum is usually taken on a full-time basis upon completion of didactic coursework. Students are typically in a clinical laboratory eight hours per day (daytime hours), five days per week. Admitted students must be able to fulfill the necessary time requirement for the practicum.

Coursework at GW

MLS 4118	Laboratory Operations
MLS 4141	Immunology and Serology
MLS 4145	Clinical Biochemistry
MLS 4155	Clinical Biochemistry II
MLS 4151	Molecular Diagnostics
MLS 4161	Clinical Biochemistry Practicum
MLS 4140	Clinical Laboratory Mgt

Clinical rotations are completed at an approved clinical site and vary in length, lasting between 1 to 4 weeks each.

POST-BACCALAUREATE CERTIFICATE IN THE FIELD OF HEMATOLOGY FOR MEDICAL LABORATORY SCIENCE

REQUIREMENTS

The post-baccalaureate certificate in hematology for medical laboratory science (MLS) requires completion of 17 credits. Completion of the certificate qualifies the graduate to take the Technologist in Hematology examination offered by national certifying agencies.

Admitted students complete required courses either on a part-time or full-time basis. Courses in the major are designed to broaden the student's foundation in the sciences in preparation for the clinical phase of the program. All courses are taught online, with the exception of the clinical practicum.

The clinical practicum is usually taken on a full-time basis upon completion of didactic coursework. Students are typically in a clinical laboratory eight hours per day (daytime hours), five days per week. Admitted students must be able to fulfill the necessary time requirement for the practicum.

Coursework at GW

MLS 4118	Laboratory Operations
MLS 4128	Hematology I
MLS 4129	Hematology II
MLS 4140	Clinical Laboratory Mgt
MLS 4141	Immunology and Serology
MLS 4151	Molecular Diagnostics
MLS 4162	Hematology and Hemostasis Practicum

Clinical rotations are completed at an approved clinical site and vary in length, lasting between 1 to 4 weeks each.

POST-BACCALAUREATE CERTIFICATE IN THE FIELD OF MEDICAL LABORATORY SCIENCE

REQUIREMENTS

The Post-Baccalaureate Certificate in Medical Laboratory Science (MLS) requires completion of 45 credit hours, divided into two components, 29 credits of MLS Courses and 16 credits of clinical practicum courses.

Admitted students complete required courses either on a part-time or full-time basis. Courses in the major are designed to broaden the student's foundation in the sciences in preparation for the clinical phase of the program. All courses are taught online, with the exception of the four months of clinical practica.

The clinical practica are usually taken on a full-time basis upon completion of didactic coursework. Students are typically in a clinical laboratory eight hours per day (daytime hours), five days per week. Admitted students must be able to fulfill the necessary time requirement for the practica.

Coursework at GW

29 credits of MLS courses

MLS 4114	Clinical Microbiology (credit)
MLS 4115	Parasitology and Mycology
MLS 4118	Laboratory Operations
MLS 4120	Urinalysis & Body Fluids
MLS 4124	Clinical Microbiology II
MLS 4128	Hematology I
MLS 4129	Hematology II
MLS 4140	Clinical Laboratory Mgt
MLS 4141	Immunology and Serology
MLS 4145	Clinical Biochemistry
MLS 4150	Immunohematology
MLS 4151	Molecular Diagnostics
MLS 4155	Clinical Biochemistry II
MLS 4159	Capstone Seminar
16 credits of clinical practicum courses	
MLS 4160	Blood Bank Practicum
MLS 4161	Clinical Biochemistry Practicum
MLS 4162	Hematology and Hemostasis Practicum
MLS 4163	Immunology and Serology Practicum
MLS 4164	ClinicalMicrobiology Practicum
MLS 4165	Urinalysis and Body Fluids Practicum

Clinical rotations are completed at an approved clinical site and vary in length, lasting between 1 to 4 weeks each, for a total of 4 months.

POST-BACCALAUREATE CERTIFICATE IN THE FIELD OF MICROBIOLOGY FOR MEDICAL LABORATORY SCIENCE

REQUIREMENTS

The post-baccalaureate certificate in microbiology for medical laboratory science (MLS) requires completion of 19 credits. Completion of the certificate qualifies the graduate to take the Technologist in Microbiology examination offered by national certifying agencies.

Admitted students complete required courses either on a part-time or full-time basis. Courses in the major are designed to broaden the student's foundation in the sciences in preparation for the clinical phase of the program. All courses are taught online, with the exception of the clinical practicum.

The clinical practicum is usually taken on a full-time basis upon completion of didactic coursework. Students are typically in a clinical laboratory eight hours per day (daytime hours), five days per week. Admitted students must be able to fulfill the necessary time requirement for the practicum.

Coursework at GW

MLS 4118	Laboratory Operations
MLS 4114	Clinical Microbiology
MLS 4115	Parasitology and Mycology
MLS 4124	Clinical Microbiology II
MLS 4140	Clinical Laboratory Mgt
MLS 4141	Immunology and Serology
MLS 4151	Molecular Diagnostics
MLS 4164	ClinicalMicrobiology Practicum

Clinical rotations are completed at an approved clinical site and vary in length, lasting between 1 to 4 weeks each.

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

Dean D.S. Dolling

Associate Deans B. Narahari, C.E. Korman, R. Riffat

The School of Engineering and Applied Science was organized in 1884 as the Corcoran Scientific School of Columbian University, named in honor of William W. Corcoran, president of the University's Board of Trustees from 1869 to 1888. The school was among the first to accept women for degree candidacy in engineering. While the organization and offerings of the school have evolved over the years, through most of its history its programs have been characterized by an emphasis on principles guiding the advancement of technology.

Through its five departments—Civil and Environmental Engineering, Computer Science, Electrical and Computer Engineering, Engineering Management and Systems Engineering, and Mechanical and Aerospace Engineering—the School of Engineering and Applied Science offers the Bachelor of Science, Bachelor of Arts, Master of Science, Doctor of Philosophy, and the professional degrees of Engineer and Applied Scientist. Several graduate certificate programs are offered, and combined bachelor's/master's degree programs are available. In cooperation with the GW Law School, an integrated engineering and law program leading to the B.S. or B.A. and J.D. is offered.

Research centers and institutes provide opportunities for student and faculty research, strengthening ties with counterparts in government and industry, and contributing to the development and harnessing of emerging technology. Extensive and varied laboratories and computing facilities support the academic programs. The School strongly supports co-curricular activities to broaden and deepen its students' overall educational programs, including an extensive array of internship opportunities at government laboratories and private companies, both in the Washington area and elsewhere. Other opportunities are engineering-type team competitions, research projects, and the SEAS student government organization, the Engineers' Council.

REGULATIONS

- Undergraduate Programs (p. 96)
- Master's Programs (p. 99)
- Professional Degrees (p. 101)
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Undergraduate Programs

Residence

Sixty credit hours must be completed in residence. Full-time students normally complete their programs in four years.

Advising

Every entering undergraduate student is assigned a professional advisor to assist in orientation in the professional discipline. Faculty advisors counsel students on their programs of study, achievement and maintenance of satisfactory scholastic performance, professional development, and extracurricular activity as part of the educational process. The advisor represents the student in all cases requiring faculty action. Students must obtain their advisor's approval of their program of study prior to registration for each academic semester and summer session. The advisor's approval must be obtained before registering for a course at another institution. Until the work required for the degree is completed, students must consult with their advisors in all academic matters. However, an advisor may not deny entry into any course or activity to which the student is entitled under the regulations of the School.

Assignment of Transfer Credit

Transfer students should complete a Transfer of Credit worksheet (<http://www.seas.gwu.edu/forms>), available in the SEAS Office of Undergraduate Student Services, Advising, and Records (<http://www.seas.gwu.edu/undergraduate-student-services-advising-and-records>) and present the worksheet to the faculty advisor for approval. See Admissions page for more detail on residence and transfer credit policies.

Credit by Examination

See Admissions page for information on credit assignment for College Board Advanced Placement Tests.

Makeup of Credit for Waived Courses

Waiver of a required course requires approval of the student's faculty advisor and department chair. If a course required by the SEAS curriculum is waived, the corresponding credit hours must be earned by satisfactory completion of a university-level academic course, either technical or nontechnical, approved by the student's faculty advisor. Only if the substituted course would normally be considered part of the student's curriculum will the grade earned be used in determining grade-point average, Dean's List, probation, and suspension.

Scholarship Requirements

To be eligible for graduation a student must have at least:

1. an overall grade-point average of 2.0,
2. an overall GPA of 2.0 for the program taken at SEAS, and
3. a GPA of 2.2 for technical courses required in the fifth through eighth semesters.

All computer science courses taken to meet the degree requirements of the Bachelor of Arts or Bachelor of Science in computer science are considered technical for this purpose. As part of a residency requirement, all Computer Science majors must take a minimum of 30 credits in Computer Science at GWU including courses taken during their approved study abroad program. (In determining probation, suspension, or

Dean's List status, the grades used are for academic courses taken in fulfillment of degree requirements and not for remedial courses or those taken to make up deficiencies. For example, EAP courses and non-SEAS courses taken in excess of the number needed to fulfill degree requirements are not considered.)

Probation

Full-time students are placed on probation if their grade-point average is below 2.0 for one semester or if they receive more than one grade of *F* in one semester or summer session. Part-time students are placed on probation if their GPA is below 2.0 or they have received more than one grade of *F* after accumulating 12 credit hours; a new grading period is considered to begin once this accumulation is reached. Students on probation who earn a GPA of at least 2.0 (for 12 or more credit hours) during the semester on probation but also receive a grade of *F* are continued on probation; students in this category who receive two or more *F*s are suspended.

Full-time students are removed from probation when the GPA is at least 2.0 with no grade of *F* during the semester on probation. Part-time students are removed from probation when the GPA is at least 2.0 and they receive no grade of *F* for the next 12 credit hours after being placed on probation.

Suspension

The following circumstances constitute grounds for suspension:

1. two grades of *F* any time during a probation period (part-time students who receive two grades of *F* while on probation will be suspended at the time of receipt of the second *F*);
2. four grades of *F* in any semester (or the equivalent for part-time students);
3. placement on probation for a third time;
4. a cumulative grade-point average of
 - a. 1.5 or below at the end of four semesters of full-time enrollment at the university,
 - b. 1.9 or below at the end of six semesters of full-time enrollment at the university, or
 - c. below 2.0 at any time during the senior year.

Department faculty may designate additional courses to be taken and specify grades to be received by students who fail to meet but come close to meeting the graduation requirements; suspension may be held in abeyance for a stated period in this circumstance.

Students readmitted on probation will be suspended if they do not attain a minimum GPA of 2.0 during their first semester (12 or more credit hours) or if they receive more than one grade of *F* during the period.

Once suspended, a student may not have that suspension rescinded by a grade change at a later date, although the student may apply for readmission noting the grade

change. Students who have been suspended may not apply for readmission until one year after the suspension. To be considered for readmission, a student must have undertaken academic work at another institution, primarily in mathematics, science, or engineering, during the year of suspension and earned a GPA of at least 2.7. Applications for readmission are reviewed by the respective departments.

Dean's Honors and Commendation Lists

The names of all students who, in a given semester, take 12 or more graded credit hours in course work that applies to graduation requirements (or in any additional SEAS courses taken) may appear on the Dean's Honors List if a grade-point average of 3.5 is achieved or on the Dean's Commendation List if a GPA of 3.0 is achieved. No disciplinary action may have been taken against the student, and no more than one grade below *B–* and no grades below *C–* may have been earned. A student who receives a notation of *I* (Incomplete) during a semester will not be placed on the Dean's Honors or Commendation List for that semester unless the *I* is changed to *I* followed by a letter grade within 30 days of the end of the marking period and the student continues to meet all the requirements for the Dean's Honors or Commendation List.

Incompletes

Conditions under which the notation of *I* (Incomplete) may be assigned are described under University Regulations. If the *I* is not changed to *I* followed by a letter grade within 30 days, decisions on probation, removal from probation, and suspension will be made with the information on hand, in conformance with SEAS regulations. Although the *I* may remain on the record for a maximum of one year, the instructor should normally set a much briefer period within which the uncompleted work (usually the final examination or required paper) must be made up. The *I* cannot be removed by the student's reregistering for the course here or taking its equivalent elsewhere. An *I* that is not removed after one calendar year or at the time of graduation of the student, whichever occurs first, will be changed on the permanent record to a grade of *IF*. When the *I* is changed to a letter grade, the *I* followed by the letter grade (e.g., *IB*) will appear on the student's record. The grade for which the *I* is changed will be applied to the grade report for the semester or summer session during which the change is made for the purposes of determining probation, suspension, grade-point average, and Dean's and other honor lists.

Pass/No Pass Grading System

SEAS students may not take courses required for graduation on the pass/no pass (*P/NP*) grading system. They may, however, take courses outside their regular SEAS academic program under this grading system.

Academic Work Load

A full-time undergraduate student who is not on probation may register for no more than 21 credit hours. Students on probation may not register for more than 13 credit hours. A

student employed more than 24 hours a week may take no more than 10 credit hours. In exceptional cases these limits may be exceeded with the faculty advisor's permission.

Humanities and Social Sciences Electives

With the assistance of the advisor, each student in a SEAS B.S. program chooses a set of elective courses in the humanities and social sciences. For most B.S. curricula, these normally consist of a minimum of 18 credit hours, divided equally between the humanities and social sciences. Each 9-credit group must include two courses in one subject area and a third course in a different subject area. When a foreign language is taken as part of the humanities requirement, the following rules apply:

1. the foreign language studied must not be a native language of the student, unless the courses taken are literature courses;
2. if the student has studied the language previously, he or she must first take a placement test given by the language department concerned and enroll in a course recommended by that department; and
3. the student may use at most two foreign language courses to satisfy SEAS's humanities requirements. If two courses are used, they must be in the same foreign language.

The advisor must approve the program.

Since the SEAS curricula are, by necessity, oriented toward technical subjects, the humanities and social sciences electives should be courses that broaden the student's outlook. Courses in areas such as anthropology, economics, foreign languages, geography, history, literature, philosophy, political science, psychology, and sociology are considered appropriate.

Bachelor of Science Degree Programs

Check with the department concerned for total credit requirements for the degree programs. The listed curriculums assume all electives to be at least 3 credit hours. Credit toward the degree is not allowed for LSPA courses.

Bachelor of Arts Degree Programs

The School of Engineering and Applied Science offers a Bachelor of Arts degree, with majors in applied science and technology and in computer science. Each program provides a strong and level base for students who intend to make their careers in fields allied to science and technology or to computer science. See the department of Computer Science for more information about its Bachelor of Arts degree and the department of Engineering Management and Systems Engineering for more information about its Bachelor of Arts degree.

Special Programs

Combined degree programs available to SEAS students include the B.S. and M.S. in civil engineering, mechanical engineering, and systems engineering; the B.A. or B.S. and

M.S. in computer science or in cybersecurity in computer science; the B.S. in biomedical engineering, computer engineering, or electrical engineering and M.S. in biomedical engineering, computer engineering, or electrical engineering; and the B.S. in computer engineering, computer science, electrical engineering, or systems engineering and M.S. in engineering management. Also available is the B.A. in applied science and technology or computer science in SEAS and M.Ed. in secondary education (with a specialization in computer science, science, or mathematics) in the Graduate School of Education and Human Development. Specific information is available from the departments concerned.

Integrated Engineering and Law Program

The integrated engineering and law program provides an opportunity for very highly qualified entering students to complete a B.S. or B.A. degree in a SEAS field and then a J.D. degree, by assuring admission to the GW Law School's J.D. program for students who meet stated conditions. Detailed information on this program is available from the Office of Undergraduate Admissions.

Double Majors

Students who complete the requirements for two majors in SEAS may graduate with a double major, provided the two majors are in different departments. Consult advisors in the two departments and declare both majors on the appropriate form in the SEAS Office of Student Services, Advising, and Records.

SEAS students may also pursue a second major in Columbian College of Arts and Sciences or the Elliott School of International Affairs, and Columbian College and Elliott School students may pursue a second major in SEAS, provided that permission has been obtained from the appropriate administrative office of each of the two schools.

The degree is earned from the home school, and students must complete the major in their own school in order to graduate.

In all cases, double majors do not result in two degrees. See Double Majors and Double Degrees under University Regulations.

3:2 Dual-Degree Programs

The School of Engineering and Applied Science has developed 3:2 dual-degree programs in liberal arts and engineering with the following institutions: Bowie State University, Gallaudet University, Hood College, Bridgewater College, St. Thomas Aquinas College, and Trinity University. Students enroll initially at one of the above institutions and pursue a three-year course of studies covering social sciences, humanities, mathematics, physics, and chemistry. They then follow a two-year program at SEAS in any of the areas of engineering or computer science offered in the School's regular four-year programs. Upon successful completion of the two-year program at GW, students are awarded two baccalaureates: a B.S. or B.A. from the first institution and a B.S. or B.A. from GW. For further information

on the 3:2 dual-degree programs, contact the admissions offices of the institutions listed above.

Minors

The SEAS Departments of Computer Science, Electrical and Computer Engineering, Engineering Management and Systems Engineering, and Mechanical and Aerospace Engineering offer minors that are available to SEAS undergraduates whose major is not offered by that department. Depending on the student's major, additional credit hours beyond the minimum required for the major may be necessary to complete the minor. Consult the advisor and the departments concerned.

The School offers minors in biomedical engineering, computer engineering, computer science, electrical engineering, engineering analysis, and operations research to students in other schools of the University. SEAS students are cautioned to consult their advisor and department chair before enrolling in a minor in another school of the University.

Concentration in General Business

The GW School of Business offers a concentration in general business for well-qualified SEAS undergraduates. Depending on the student's major, additional credit hours beyond the minimum required for the major may be necessary in order to complete this concentration; students should consult their advisor before requesting to add the concentration to their program or beginning to fulfill its requirements.

Master's Programs

Degree Programs

Fields of graduate study offered by the School of Engineering and Applied Science include biomedical engineering, civil and environmental engineering, computer engineering, computer science, electrical engineering, engineering management, mechanical and aerospace engineering, systems engineering, and (at the M.S. level only) cybersecurity in computer science, and telecommunications engineering. Degree requirements and representative areas of focus within each field are listed in subsequent pages. Within some fields, students may choose to focus their course work in other specialties as well. For information on professional and doctoral degree study in a given field, contact the department administering the field.

Entrance requirements are outlined under individual degree programs, below. The following information pertains to all SEAS graduate programs.

Transfer of Credit

With the approval of the student's advisor and department chair, graduate credit may be transferred, when applicable, to meet degree requirements of the School. For a master's or professional degree candidate, or a doctoral candidate whose highest earned degree is a master's, up to 6 credit hours may be transferred. For a doctoral candidate whose highest earned degree is a bachelor's degree, up to 24 credit

hours may be transferred from another doctoral program. The credit must have been completed with grades of *A* or *B* at another accredited and recognized institution, at a level of study equivalent to that being pursued at GW. The professional and doctoral degree programs require that the credit be earned no more than five years prior to admission to the GW program, and some departments require that it be earned more recently. Credit applied toward a previous degree may not be transferred. Transfer of credit regulations apply to courses taken as a nondegree student through GW's Office of Non-Degree Students; that is, up to 6 credit hours may be taken in non-degree status before applying for admission to degree status. For purposes of transfer of credit, SEAS graduate certificate programs are not considered prior degrees; at the discretion of the department concerned, the credit hours earned in a SEAS certificate program may be applied to a subsequent master's degree program.

English Language Requirements for International Students

Applicants who are not citizens of countries where English is the official language or who do not hold a degree from a regionally accredited U.S. institution of higher learning are required to submit scores from the Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the Pearson Test of English–Academic (PTE). Specified possible exemptions from this policy can be found at graduate.admissions.gwu.edu/english-language-requirements (<http://graduate.admissions.gwu.edu/english-language-requirements>). The required minimum score for admission is 550 paper-based or 80 Internet-based on the TOEFL, an overall band score of 6.0 on the IELTS with no individual band score below 5.0, or a score of 53 on the PTE. Applicants for graduate teaching assistantships must have a minimum score of 600 paper-based or 100 Internet-based on the TOEFL, an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE. The Department of Engineering Management and Systems Engineering requires a TOEFL score of 600 paper-based or 100 internet-based, or an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE.

Students with the following English language test scores are exempt from taking English for Academic Purposes (EAP) courses: TOEFL, 600 paper-based or 100 Internet-based; IELTS, overall band score of 7.0 with no individual band score below 6.0; PTE, 68. Students with test scores below these minimums must register for an EAP course during their first semester. Students assigned EAP courses should anticipate additional tuition expenses as well as a possible extended period of time required to complete their degree program. EAP courses do not count toward degree requirements.

Grades

Information on grades and computing the grade-point average is found under University Regulations.

At the option of the instructor, the notation of *I* (Incomplete) may be recorded if a student, for reasons beyond his or her control, is unable to complete the work of the course and if the instructor is informed of and approves such reasons before the date when grades must be reported. The *I* may be used only if the student's prior performance and class attendance in the course have been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded *F*. If acceptable reasons are later presented, the instructor may initiate an appropriate grade change. Although the *I* may remain on the record for a maximum of one year, the instructor should normally set a much briefer period within which the uncompleted work must be made up. The *I* cannot be removed by the student's reregistering for the course here or taking its equivalent elsewhere. An incomplete that is not removed within one calendar year or at the time of graduation of the student, whichever occurs first, is automatically changed to an *IF*. When the *I* is changed to a letter grade, the *I* followed by the letter grade (e.g., *IB*) will appear on the student's record. EMSE students with two or more outstanding Incompletes are barred from further course enrollment; see Incompletes under University Regulations regarding continuous enrollment.

Credit/No Credit Grading System

SEAS students may take SEAS courses under the credit/no credit grading system, but credit for such courses cannot be applied toward any degree program in SEAS.

Program of Study

In consultation with the academic advisor, each student develops a program of study and enters it on a form that governs the student's degree requirements and that must be approved by the advisor and department chair. The form should be established soon after matriculation and must be completed before the end of the student's first semester.

Residence and Continuous Enrollment

All work for the degree must be done in residence unless an exception is granted by the department chair. A student in a degree program is expected to be continuously enrolled in the School until the degree is conferred. To maintain continuous enrollment, a student may register in one of the following categories.

Leave of Absence

This status is available to students who are attending classes at another institution (special approval is required); who are temporarily transferred out of the area (e.g., for military TDY); or who are having temporary medical problems. A leave of absence is usually limited to two semesters.

Continuing Research

Students who have completed their research credits, but are not yet ready to defend a thesis or dissertation, must register for 1 credit of Continuing Research each semester as appropriate.

Examination Preparation

Students who are studying for a comprehensive or qualifying exam for the current or following semester, and are not taking any courses, must register for 1 credit of Examination Preparation as appropriate. A student who breaks his or her registration must apply for readmission to the degree program under whatever conditions and regulations are in force at that time.

Master of Science

Entrance Requirements

Admission to the Master of Science degree program requires an appropriate bachelor's degree from a recognized institution and evidence of a strong academic background and capacity for productive work in the field selected. All applicants must submit scores from the Graduate Record Examination general test, except applicants from SEAS undergraduate programs and those applying to special cohort and contract programs. In general, a grade average of *B* (3.0 on a scale of 4.0) in the last 60 hours of undergraduate course work is required, and most successful applicants score higher than the 90th percentile on the quantitative section of the GRE. Department-specific requirements are at the Graduate Admissions webpage (<http://www.gwu.edu/gradapply>).

Scholarship Requirements

Courses specified in a student's program of study must be completed with a minimum grade-point average of 3.0 for award of a master's degree. Courses specified upon admission as deficiency or prerequisite courses do not form part of the program of study. A student who receives two grades of *F* or three grades below *B–* is barred from further enrollment in graduate courses and, ordinarily, will not be readmitted as a degree candidate. A student may not repeat for credit a course in which he or she has received a grade of *C–* or above, unless required to do so by the department chair. A written statement requiring the student to repeat such a course for credit must be submitted to the registrar by the department chair.

Time Limits

A full-time student in the master's program is allowed a maximum of three calendar years (excluding any time spent taking only English for Academic Purposes courses) to complete all degree requirements, from the date of first registration as a degree candidate in prerequisite or graduate courses. A part-time student in the master's program is allowed a maximum of five calendar years. The time limit does not include any period of registration as an unclassified student before admission to degree candidate status or any period spent on approved leave of absence. Students on F1 or J1 visas

and students with external funding may have different time limits. Students who do not complete degree requirements within the allowed time will have their degree candidate status terminated. They may be readmitted to degree candidate status under conditions specified by the department chair and approved by the dean.

Master's Thesis

The master's thesis must demonstrate the student's ability to make independent use of the knowledge and discipline of thought acquired through graduate study, to undertake constructive work in a given field, and to communicate the results of the work in writing. Suitable work for which the student has professional responsibility may be considered, whether done on or off campus, provided no significant amount of work is completed without faculty supervision. An accepted thesis is the property of the University.

To register for the thesis course sequence, the candidate must submit the thesis area to the appropriate department chair, on the form obtained from the department office and approved by the faculty advisor. At the beginning of the semester of expected graduation, the candidate must submit the thesis title to the dean, on the form available in the department office. While registered in the thesis course sequence, the student is entitled to the advice of the faculty member under whom the thesis is to be written. Students may consult with their advisors, but they have primary responsibility for the thesis. Students orally defend their thesis before a committee of School faculty.

The thesis in final form must be submitted by the stated deadline. In the event a thesis is unfinished on the date specified, the student must register for continuing research. The overall time limit for earning the degree (see Time Limits, above) may not be exceeded. All theses must be submitted electronically and meet the formatting and other requirements set forth on line at GW's Electronic Theses and Dissertations Submission website (<http://library.gwu.edu/etds>).

Fields of Study

Master of Science programs in the School of Engineering and Applied Science are available in the fields of biomedical engineering, civil and environmental engineering, computer engineering, computer science, electrical engineering, engineering management, mechanical and aerospace engineering, systems engineering, cybersecurity in computer science, and telecommunications engineering. Each field in turn encompasses several areas of focus. The course of study responds to the unique interests of the student, who designs an individual program in close consultation with the assigned advisor. In most areas, students follow a prescribed core and elect approved courses from within the School of Engineering and Applied Science and from other schools of the University. Because engineering expertise includes a broad foundation in technology, engineering study may profitably be combined with study in other areas to sharpen the engineer's focus in practice. Students must satisfy, through undergraduate studies

or otherwise, either the prerequisites specified for the desired field or approved equivalents.

Professional Degrees

The School of Engineering and Applied Science has established the professional degree program for those students who wish to pursue course work beyond the master's degree with emphasis on applied subject material rather than on basic research. Successful completion of the professional degree program leads to the degree of Engineer or of Applied Scientist.

Admission to study toward the professional degree requires an appropriate master's degree from a recognized institution and evidence of capacity for productive work in the field selected as indicated by prior scholarship and, where appropriate, professional experience. The Departments of Computer Science and of Electrical and Computer Engineering require applicants for the professional degree to have had two years of professional experience after receiving the master's degree.

To study toward the degree of Engineer, an applicant must have earned a bachelor's degree and a master's degree in an area of engineering.

To study toward the degree of Applied Scientist, an applicant must possess a master's degree in engineering, computer science, natural science, or mathematics. Applicants who have an equivalent quantitative background may be considered as special cases by the respective departments.

Normally, a *B* average in graduate work is required, although the departments often set higher admission standards. Some programs have specified prerequisites. An applicant who has significant deficiencies in preparation may be required to take prescribed prerequisite courses, which do not count toward any part of the requirements for the professional degree.

The minimum program consists of 30 credit hours of approved graduate courses beyond a master's degree. Students whose prior study does not include course prerequisites may be required to take additional course work.

Programs are determined by established prerequisites and the requirements of the department in which the student wishes to study. The program of each professional degree candidate must be approved by the student's advisor and the department chair.

Each department may require its degree candidates to undertake and defend the results of a technical design project or a development problem or to prepare a comprehensive technical report to demonstrate the candidate's ability to make independent use of the knowledge and discipline of thought acquired through graduate study. When applicable, the student will be informed of this requirement by the faculty advisor at the time the student's program is being formulated.

The project may not be more than 6 credit hours out of the minimum 30.

If a student studying for the professional degree receives two grades of *F* or three grades below *B–*, study is terminated and further enrollment prohibited. A student must have a final grade-point average of at least 3.0 to receive the degree. The Department of Engineering Management and Systems Engineering requires a final grade-point average of at least 3.4.

A full-time student in the professional degree program is allowed a maximum of three calendar years to complete all degree requirements, from the date of first registration as a degree candidate in prerequisite or graduate courses. A part-time student in this program is allowed a maximum of five calendar years. The time limit does not include any period of registration as an unclassified student before admission to degree candidate status or any period spent on approved leave of absence. Students who do not complete degree requirements within the allowed time will have their degree candidate status terminated. They may be readmitted to degree candidate status under conditions specified by the department chair.

Candidates for the Doctor of Philosophy degree or professional degree who are in good academic standing may, with the approval of the faculty advisor and department chair, transfer from one degree program to the other within their department if they meet the qualifications and requirements specified by the department. In the Department of Engineering Management and Systems Engineering, only one such transfer is permitted.

Doctoral Program

Doctor of Philosophy

The doctoral program is designed to prepare the student for a career of creative scholarship by providing a broad but balanced background of knowledge and guidance in the performance of research. The program is divided into two stages. The first comprises a study of related fields of learning that support the general area of research concentration and culminates in the qualifying examination. The second, composed of original research and the presentation of findings in a written dissertation, culminates in the final examination.

Admission to the Doctor of Philosophy degree program requires an appropriate earned bachelor's or master's degree from a recognized institution, evidence of a strong academic or relevant professional background, course work designated by the department as pertinent to the field to be studied, and capacity for research. All applicants must submit scores from the Graduate Record Examination general test, except applicants from SEAS M.S. programs. Most successful applicants score higher than the 90th percentile on the quantitative section of the GRE. Students whose highest earned degree is a bachelor's degree must present a grade-point

average of at least 3.3 on a scale of 4.0 in undergraduate work. For students whose highest earned degree is a master's degree, departmental requirements for the grade-point average in course work leading to that degree are as follows (on a scale of 4.0): Civil and Environmental Engineering, Electrical and Computer Engineering, and Mechanical and Aerospace Engineering, 3.4; Computer Science, and Engineering Management and Systems Engineering, 3.5. Consult the department concerned for field-specific admission requirements.

Upon admission to the first stage of the program (that is, study of related fields culminating in the qualifying examination), the student is assigned a faculty advisor who directs his or her studies. In some departments a faculty committee may be appointed instead of a single advisor. Programs of study are structured to include a major field and two minor or supporting fields. Check with the department concerned for requirements.

A minimum of 30 credit hours in a formal program of study at the graduate level beyond master's study or, for students without a master's degree, a minimum of 54 credit hours in a formal program of study at the graduate level beyond the baccalaureate is required. These credit hours include both course credit and Dissertation Research credit. Individual requirements may vary by department; check with the department concerned. In many cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credit hours. Departments may establish a tool requirement, such as an examination in a computer language. Consult the department concerned for specific curriculum requirements.

If a doctoral student receives two grades of *F* or three grades below *B–*, graduate study is terminated and further enrollment prohibited. Courses in which the student earns grades below *B–* are not included in the total credit-hour requirement for the degree. Students who receive any grade below *B–* are required to review their programs of study with their advisors.

In general, one year of full-time study is the minimum amount of time to be spent in preparation for the qualifying examination, although the student may apply for the examination whenever he or she feels properly prepared. The qualifying examination must be completed within five years of the date of admission, and the entire degree program must be completed within seven years unless an extension is granted by the department. Approval of an extension is conditional on satisfactory progress. The time period for completion of the degree may be adjusted by the department for an approved leave of absence. A minimum of two years of full-time study and research should be expected in meeting the requirements for the degree. All time periods indicated here are increased by two years for a student entering the doctoral program without a master's degree.

Full-time doctoral students must register for a minimum of 9 credits per semester until the minimum credit hours are completed, and 1 credit of Continuing Research each semester thereafter until satisfactory completion of the final examination. Part-time doctoral students must normally register for a minimum of 6 credits per semester until the minimum credit hours are completed and 1 credit of Continuing Research each semester thereafter until satisfactory completion of the final examination. No minimum load is required during the summer sessions.

Preliminary and Qualifying Examinations

The Department of Computer Science requires a preliminary examination that must be passed within four semesters of starting the program. It comprises material from the areas of algorithms and theory, and software and systems.

The Department of Electrical and Computer Engineering requires a preliminary examination that must be taken before completing 18 credits after initial registration. The examination is guided by but not limited to the core material of the master's program. Specific details regarding the structure of the exam are available in the department.

To be admitted to the qualifying examination that is required of all doctoral students, the student must have at least a cumulative grade-point average of 3.2 in the Departments of Civil and Environmental Engineering and Computer Science, and of 3.4 in the Departments of Mechanical and Aerospace Engineering, Engineering Management and Systems Engineering, and Electrical and Computer Engineering.

The qualifying examination is the principal means of determining whether a student will qualify as a candidate for the doctoral degree and progress to the second stage of the program. Its purpose is to ascertain that the student's background and intellectual development are adequate to support doctoral research in the central field. (Some departments may administer a prequalifying examination prior to completion of the study program.)

Qualifying/preliminary examinations may be written or oral or both. They are conducted on dates established by the departments and are administered by a faculty committee. Upon favorable report of the examiners following the qualifying examination, the student is admitted to candidacy for the degree; the student then begins specialized study and research under the supervision of a designated member of the full-time faculty.

At the discretion of the committee that prepared the examination, a student who fails any part of the qualifying examination may be given a second opportunity to qualify for candidacy. Usually, the entire examination must be retaken.

Students who fail to qualify for candidacy in a doctoral program of the School will be considered to have failed on a school-

wide basis and will not be admitted to further doctoral study within the School.

The Dissertation and Final Examination

The student admitted to candidacy for the degree of Doctor of Philosophy chooses the faculty member under whom he or she wishes to conduct research; the faculty member may accept or reject the request to serve as the student's director of research. The research area is approved by the director, and throughout the remainder of the doctoral program the candidate conducts dissertation research under the director. However, the student may consult other members of the faculty on an informal basis. In the Department of Engineering Management and Systems Engineering and the Department of Civil and Environmental Engineering, students are required to present a written dissertation proposal to a committee of three full-time faculty members and to successfully defend the proposal in an oral defense prior to performing the bulk of their dissertation research. Work on the dissertation encompasses a minimum of 12 to 24 credit hours, depending upon the department concerned.

The dissertation should embody the results of an extended original study and include material deemed worthy of publication in recognized scientific and engineering journals. The student is expected to attempt to have the results of the research published as soon as possible after he or she receives the degree and to submit copies of the published material to the dean. The Department of Computer Science requires that at least one article be accepted for publication by a refereed conference or journal prior to completion of degree requirements. The Department of Engineering Management and Systems Engineering requires that an article be accepted for review by a refereed journal prior to completion of degree requirements. The Department of Electrical and Computer Engineering requires the submission of a paper to a refereed journal and its acceptance for publication prior to the completion of degree requirements. Credit must be given in the publication to the fact that the material is abstracted, summarized, or developed from a dissertation submitted to The George Washington University in partial fulfillment of the requirements for the Doctor of Philosophy degree.

All dissertations must be submitted electronically and meet the formatting and other requirements set forth online at GW's Electronic Theses and Dissertations Submission website (<http://library.gwu.edu/etds>). Regulations regarding the form of the dissertation and preparation of the abstract are available in department offices. The dissertation, with accompanying files, becomes the property of the University.

Upon acceptance of the dissertation by the research committee, the candidate is presented for the final examination. The final examination is oral and is open to the public. The candidate must demonstrate a mastery of the special field of study and of the materials and techniques used in the research. The committee of examiners may include qualified experts brought to the University especially

to participate in the examination. The director of research usually serves as advocate for the candidate. Students should consult department regulations concerning the formation of the committee and scheduling of the examination. When the examining committee is convinced of the quality and originality of the candidate's contribution to knowledge as well as his or her mastery of the scholarship and research techniques of the field, the committee recommends the candidate for the degree of Doctor of Philosophy. Students completing their degree program should refer to the section on Graduation Requirements, Participation in the Commencement Ceremony, under University Regulations.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in applied science and technology (p. 129)
- Bachelor of Arts with a major in computer science (p. 118)
- Bachelor of Science with a major in biomedical engineering (p. 122)
- Bachelor of Science with a major in civil engineering (p. 110)
- Bachelor of Science with a major in civil engineering, environmental engineering option (p. 112)
- Bachelor of Science with a major in civil engineering, medical preparation option (p. 113)
- Bachelor of Science with a major in civil engineering, sustainability engineering option (p. 114)
- Bachelor of Science with a major in civil engineering, transportation engineering option (p. 115)
- Bachelor of Science with a major in computer engineering (p. 123)
- Bachelor of Science with a major in computer science (p. 119)
- Bachelor of Science with a major in electrical engineering (p. 124)
- Bachelor of Science with a major in mechanical engineering (p. 133)
- Bachelor of Science with a major in mechanical engineering, aerospace option (p. 134)
- Bachelor of Science with a major in mechanical engineering, biomechanical option (p. 135)
- Bachelor of Science with a major in mechanical engineering, medical preparation option (p. 136)
- Bachelor of Science with a major in mechanical engineering, patent law option (p. 138)
- Bachelor of Science with a major in mechanical engineering, robotics option (p. 139)
- Bachelor of Science with a major in systems engineering (p. 130)

GRADUATE

Master's programs

- Master of Science in the field of civil and environmental engineering (p. 116)
- Master of Science in the field of biomedical engineering (p. 125)
- Master of Science in the field of computer science (p. 120)
- Master of Science in the field of computer engineering (p. 126)
- Master of Science in the field of cybersecurity in computer science (p. 121)
- Master of Science in the field of electrical engineering (p. 126)
- Master of Science in the field of engineering management and systems engineering (p. 131)
- Master of Science in the field of mechanical and aerospace engineering (p. 131)
- Master of Science in the field of telecommunications engineering (p. 127)

Doctoral program

- Doctor of Philosophy (<http://bulletin.gwu.edu/engineering-applied-science/doctoral-programs>) (<http://bulletin.gwu.edu/engineering-applied-science/doctoral-programs>)

CERTIFICATES

The School of Engineering and Applied Science offers graduate certificate programs in several fields. At the discretion of the respective departments, credit earned in the certificate program can be applied to a subsequent master's degree program. Scholarship requirements are the same as those for the master's degree program. Details are available in the Office of the Dean.

- Graduate certificate in computer-integrated design in mechanical and aerospace engineering
- Graduate certificate in computer security and information assurance
- Graduate certificate in emergency management and public health
- Graduate certificate in energy engineering and management
- Graduate certificate in engineering and technology management
- Graduate certificate in enterprise information assurance
- Graduate certificate in environmental engineering
- Graduate certificate in geoenvironmental engineering
- Graduate certificate in high-performance computing
- Graduate certificate in homeland security emergency preparedness and response
- Graduate certificate in knowledge and information management

- Graduate certificate in structural engineering
- Graduate certificate in systems engineering
- Graduate certificate in transportation engineering

CIVIL AND ENVIRONMENTAL ENGINEERING

Mission Statement

The mission of the Department of Civil and Environmental engineering is to provide an academic environment where professional education can be pursued, scholarly research in science and technology can be conducted, and the interest of the public can be served through the advancement of knowledge.

In pursuit of this mission the administration, faculty, and staff join to provide a broad based, rigorous professional education in civil engineering at the undergraduate level, provide graduate education at the master's level in major areas of civil engineering, provide doctoral programs in selective areas of excellence within civil engineering, and serve the local community, citizens of the nation, and the people of the world.

Educational Objectives of the Bachelor of Science Program

The civil engineering undergraduate program of study prepares its graduates with the following career and professional accomplishments. Technical knowledge: students are enabled to use their technical knowledge and expertise in mathematics, science, and engineering to identify, formulate, and solve problems involving design, experimentation, and analysis of a wide variety of civil engineering applications. Team skills: students develop leadership skills, demonstrate proficiency in all forms of communication, and perform well in a multidisciplinary team environment. Continuous education: students recognize the need for continuing their education through graduate studies, continuous education opportunities, and/or self-education. Professionalism: students are prepared to exercise the highest standards of personal and professional integrity, demonstrate an understanding of the ethical and professional issues related to the procurement of work, and provide coordination between the design and construction aspects of the civil engineering profession.

These objectives are accomplished through a rigorous curriculum that emphasizes fundamentals in basic sciences, mathematics, humanities, and engineering in five major areas of civil engineering: environmental engineering, geotechnical engineering, structural engineering, water resources engineering, and transportation engineering. The curriculum enables students to use modern engineering tools to work both individually and in teams. The curriculum contains a well-structured set of courses that enable students to develop the required analytical, experimental, and design skills.

Educational Outcomes of the Bachelor of Science Program

The civil engineering undergraduate program of study prepares its graduates with the following career and professional accomplishments: an ability to apply knowledge of mathematics, science, and engineering; design and conduct experiments and analyze and interpret data; design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, health and safety, manufacturability, and sustainability constraints; identify, formulate, and solve engineering problems; use the techniques, skills, and modern engineering tools necessary for engineering practice; function on multidisciplinary teams; and communicate effectively. Students are provided with the broad education necessary to understand the impact of engineering solutions in a global economic, environmental, and social context; a knowledge of contemporary issues; an understanding of professional and ethical responsibility; and a recognition of the need for and ability to engage in lifelong learning.

The civil engineering undergraduate program curriculum includes coverage of proficiency in mathematics through differential equations, probability and statistics, calculus-based physics, and general chemistry; proficiency in a minimum of four recognized major civil engineering areas; the ability to conduct laboratory experiments and to critically analyze and interpret data in more than one of the recognized major civil engineering areas; the ability to perform civil engineering design by means of design experiences integrated throughout the professional component of the curriculum; and an understanding of professional practice issues such as procurement of work, bidding versus quality-based selection processes, how the design professionals and the construction professions interact to construct a project, the importance of professional licensure and continuing education, and/or other professional practice issues.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in civil engineering (p. 110)
- Bachelor of Science with a major in civil engineering, environmental engineering option (p. 112)
- Bachelor of Science with a major in civil engineering, medical preparation option (p. 113)
- Bachelor of Science with a major in civil engineering, sustainability option (p. 114)
- Bachelor of Science with a major in civil engineering, transportation engineering option (p. 115)

GRADUATE

Master's program

- Master of Science in the field of civil and environmental engineering (p. 116)

Doctoral program

See the School of Engineering and Applied Science for programs leading to the doctoral degree.

CERTIFICATE

The department offers graduate certificate programs in environmental engineering, geoenvironmental engineering, structural engineering, and transportation engineering.

FACULTY

Professors M.I. Haque, K.H. Digges (*Research*), A. Eskandarian, K. Roddis, M.T. Manzari (*Chair*), R. Riffat, S. Lerman

Associate Professors S.S. Badie, P.F. Silva

Assistant Professors S.H. Hamdar, T. Li, L. Farhadi, D. Shuai

Professorial Lecturers M.O. Critchfield, G.C. Everstine, K. Garrahan, F. Sadek

5-YEAR BS CIVIL ENGINEERING AND PHYSICS

Recommended program of study:

First Semester:

CE 1010 Introduction to Civil and Environmental Engineering

UW 1020 University Writing

SEAS 1001 Engineering Orientation

MATH 1231 Single-Variable Calculus I

CHEM 1111 General Chemistry I

One humanities or social sciences elective

Second Semester:

PHYS 1021 University Physics I

MATH 1232 Single-Variable Calculus II

MAE 1004 Engineering Drawing and Computer Graphics

CSCI 1121 Introduction to C Programming

One humanities or social sciences elective

Third Semester:

APSC 2057 Analytical Mechanics I

APSC 2113 Engineering Analysis I

MATH 2233 Multivariable Calculus

PHYS 1022 University Physics II

One humanities or social sciences elective

Fourth Semester:

APSC 2058 Analytical Mechanics II

CE 2210 Engineering Computations

CE 2220 Introduction to the Mechanics of Solids

CE 2710 Introduction to Transportation Engineering

GEOL 1001 Physical Geology

One humanities or social sciences elective

Fifth Semester:

APSC 3115 Engineering Analysis III

CE 3110W Civil Engineering Materials

CE 3111W Civil Engineering Materials Lab

CE 3230 Structural Theory I

CE 3720 Highway Engineering and Design

MAE 3126 Fluid Mechanics I

One humanities or social sciences elective

Sixth Semester:

CE 3240 Structural Theory 2

CE 3310 Reinforced Concrete Structures

CE 3611 Hydraulics Laboratory

CE 3520 Environmental Engineering I: Water Resources and Water Quality

CE 3610 Hydraulics

CE 3521 Environmental Engineering Laboratory

One humanities or social sciences elective

Seventh Semester:

CE 4410 Introduction to Geotechnical Engineering

CE 4411	Geotechnical Engineering Laboratory
CE 4320	Metal Structures
CE 4620	Hydrology and Hydraulic Design
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
One engineering elective selected from list below	
Eighth Semester:	
CE 4330	Contracts and Specifications
CE 4340	Design and Cost Analysis of Civil Engineering Structures
CE 6403	Geotechnical Engineering
Two engineering electives	
Civil Engineering M.SC. course	
Ninth Semester	
Civil Engineering M.SC. course	
Civil Engineering M.SC. course	
Civil Engineering M.SC. course	
Tenth Semester	
Civil Engineering M.SC. course	
Civil Engineering M.SC. course	
Civil Engineering M.SC. course	
Civil Engineering M.SC. course	

A complete list of engineering electives can be found on the department's website (<http://www.cee.seas.gwu.edu/programs-degrees>).

5-YEAR BSC/MSC IN ENVIRONMENTAL ENGINEERING

Recommended program of study:

First Semester:	
CE 1010	Introduction to Civil and Environmental Engineering
UW 1020	University Writing
SEAS 1001	Engineering Orientation
MATH 1231	Single-Variable Calculus I

CHEM 1111	General Chemistry I
One humanities or social sciences elective	
Second Semester:	
PHYS 1021	University Physics I
MATH 1232	Single-Variable Calculus II
MAE 1004	Engineering Drawing and Computer Graphics
CSCI 1121	Introduction to C Programming
CHEM 1112	General Chemistry II
Third Semester:	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MATH 2233	Multivariable Calculus
PHYS 1022	University Physics II
One humanities or social sciences elective	
Fourth Semester:	
APSC 2058	Analytical Mechanics II
CE 2210	Engineering Computations
CE 2220	Introduction to the Mechanics of Solids
CE 2710	Introduction to Transportation Engineering
GEOL 1001	Physical Geology
One humanities or social sciences elective	
Fifth Semester:	
APSC 3115	Engineering Analysis III
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
MAE 3126	Fluid Mechanics I
One humanities or social sciences elective	
One humanities or social sciences elective	
Sixth Semester:	
CE 3240	Structural Theory 2

5-YEAR BSC/MSC IN STRUCTURAL ENGINEERING

Recommended program of study:

First Semester:

CE 1010 Introduction to Civil and Environmental Engineering

UW 1020 University Writing

SEAS 1001 Engineering Orientation

MATH 1231 Single-Variable Calculus I

CHEM 1111 General Chemistry I

One humanities or social sciences elective

Second Semester:

PHYS 1021 University Physics I

MATH 1232 Single-Variable Calculus II

MAE 1004 Engineering Drawing and Computer Graphics

CSCI 1121 Introduction to C Programming

One humanities or social sciences elective

Third Semester:

APSC 2057 Analytical Mechanics I

APSC 2113 Engineering Analysis I

MATH 2233 Multivariable Calculus

PHYS 1022 University Physics II

GCR

GCR

Fourth Semester:

APSC 2058 Analytical Mechanics II

APSC 3115 Engineering Analysis III

CE 2210 Engineering Computations

CE 2220 Introduction to the Mechanics of Solids

GCR

Fifth Semester:

CE 3230 Structural Theory I

CE 3310 Reinforced Concrete Structures

CE 3520 Environmental Engineering I: Water Resources and Water Quality

CE 3610 Hydraulics

CE 3611 Hydraulics Laboratory

CE 3521 Environmental Engineering Laboratory

One humanities or social sciences elective

Seventh Semester:

CE 4410 Introduction to Geotechnical Engineering

CE 4411 Geotechnical Engineering Laboratory

CE 4320 Metal Structures

CE 4620 Hydrology and Hydraulic Design

CE 4530 Environmental Engineering II: Water Supply and Pollution Control

One engineering elective

Eighth Semester:

CE 4330 Contracts and Specifications

CE 4340 Design and Cost Analysis of Civil Engineering Structures

CE 6502 Advanced Sanitary Engineering Design

Two engineering electives

Ninth Semester

Civil Engineering M.SC. Course

Civil Engineering M.SC. Course

Civil Engineering M.SC. Course

Civil Engineering M.SC. Course

Tenth Semester

Civil Engineering M.SC. Course

Civil Engineering M.SC. Course

Civil Engineering M.SC. Course

Civil Engineering M.SC. Course

A complete list of engineering electives can be found on the department's website (<http://www.cee.seas.gwu.edu/programs-degrees>).

PHYS 1023	Modern Physics
PHYS 2151W	Intermediate Laboratory I: Techniques and Methods
GCR	
GCR	
Sixth Semester:	
CE 3240	Structural Theory 2
CE 3310	Reinforced Concrete Structures
PHYS 2161	Mechanics I
Civil engineering elective	
Seventh Semester:	
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
MAE 3126	Fluid Mechanics I
PHYS 2165	Electromagnetic Theory
GCR	
One engineering elective	
Eighth Semester:	
CE 3611	Hydraulics Laboratory
CE 3529	
CE 3610	Hydraulics
CE 3520	Environmental Engineering I: Water Resources and Water Quality
PHYS 2164	Thermal and Statistical Physics
GCR	
Ninth Semester	
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4320	Metal Structures
CE 4620	Hydrology and Hydraulic Design
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
PHYS 2167	Principles of Quantum Physics

Tenth Semester	
CE 4330	Contracts and Specifications
CE 4340	Design and Cost Analysis of Civil Engineering Structures
CE 6403	Geotechnical Engineering
Civil engineering elective	
Physics elective	
Physics elective	

A complete list of engineering electives can be found on the department's website (<http://www.cee.seas.gwu.edu/programs-degrees>).

5-YEAR BSC/MSC IN TRANSPORTATION ENGINEERING

Recommended program of study:

First Semester:	
CE 1010	Introduction to Civil and Environmental Engineering
UW 1020	University Writing
SEAS 1001	Engineering Orientation
MATH 1231	Single-Variable Calculus I
CHEM 1111	General Chemistry I
One humanities or social sciences elective	
Second Semester:	
PHYS 1021	University Physics I
MATH 1232	Single-Variable Calculus II
MAE 1004	Engineering Drawing and Computer Graphics
CSCI 1121	Introduction to C Programming
One humanities or social sciences elective	
Third Semester:	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MATH 2233	Multivariable Calculus
PHYS 1022	University Physics II

One humanities or social sciences elective

Fourth Semester:

APSC 2058	Analytical Mechanics II
CE 2210	Engineering Computations
CE 2220	Introduction to the Mechanics of Solids
CE 2710	Introduction to Transportation Engineering
GEOL 1001	Physical Geology

One humanities or social sciences elective

Fifth Semester:

APSC 3115	Engineering Analysis III
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
CE 3720	Highway Engineering and Design
MAE 3126	Fluid Mechanics I

One humanities or social sciences elective

Sixth Semester:

CE 3240	Structural Theory 2
CE 3310	Reinforced Concrete Structures
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3521	Environmental Engineering Laboratory
CE 3610	Hydraulics
CE 3611	Hydraulics Laboratory
STAT 2183	Statistical Computing Packages

Seventh Semester:

CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4320	Metal Structures
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
CE 4620	Hydrology and Hydraulic Design

One engineering elective selected from list below

Eighth Semester:

CE 4330	Contracts and Specifications
CE 4340	Design and Cost Analysis of Civil Engineering Structures
CE 6403	Geotechnical Engineering

Two engineering electives

Civil Engineering M.Sc. Course

Ninth Semester

Civil Engineering M.Sc. Course

Civil Engineering M.Sc. Course

Civil Engineering M.Sc. Course

Civil Engineering M.Sc. Course

Tenth Semester

Civil Engineering M.Sc. Course

Civil Engineering M.Sc. Course

Civil Engineering M.Sc. Course

Civil Engineering M.Sc. Course

BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING REQUIREMENTS

Civil engineering encompasses those branches of engineering most closely related to the control and improvement of our environment and of the physical conditions of life. Civil engineers apply many technical specialties in order to plan, design, and construct projects that range from buildings and transportation systems to space stations and space habitats.

Recommended program of study:

First Semester:

CE 1010	Introduction to Civil and Environmental Engineering
UW 1020	University Writing
SEAS 1001	Engineering Orientation
MATH 1231	Single-Variable Calculus I
CHEM 1111	General Chemistry I

One humanities or social sciences elective

Second Semester:

PHYS 1021 University Physics I

MATH 1232 Single-Variable Calculus II

MAE 1004 Engineering Drawing and Computer Graphics

CSCI 1121 Introduction to C Programming

One humanities or social sciences elective

Third Semester:

APSC 2057 Analytical Mechanics I

APSC 2113 Engineering Analysis I

MATH 2233 Multivariable Calculus

PHYS 1022 University Physics II

One humanities or social sciences elective

Fourth Semester:

APSC 2058 Analytical Mechanics II

CE 2210 Engineering Computations

CE 2220 Introduction to the Mechanics of Solids

CE 2710 Introduction to Transportation Engineering

GEOL 1001 Physical Geology

One humanities or social sciences elective

Fifth Semester:

APSC 3115 Engineering Analysis III

CE 3110W Civil Engineering Materials

CE 3111W Civil Engineering Materials Lab

CE 3720 Highway Engineering and Design

MAE 3126 Fluid Mechanics I

One humanities or social sciences elective

Sixth Semester:

CE 3240 Structural Theory 2

CE 3310 Reinforced Concrete Structures

CE 3611 Hydraulics Laboratory

CE 3520 Environmental Engineering I: Water Resources and Water Quality

CE 3610 Hydraulics

CE 3521 Environmental Engineering Laboratory

One humanities or social sciences elective

Seventh Semester:

CE 4410 Introduction to Geotechnical Engineering

CE 4411 Geotechnical Engineering Laboratory

CE 4320 Metal Structures

CE 4620 Hydrology and Hydraulic Design

CE 4530 Environmental Engineering II: Water Supply and Pollution Control

One engineering elective selected from list below

Eighth Semester:

CE 4330 Contracts and Specifications

CE 4340 Design and Cost Analysis of Civil Engineering Structures

CE 6403 Geotechnical Engineering

Two engineering electives from the list below

Engineering electives

CE 4810 Research

CE 4820 Special Topics

CE 6102 Application of Probability Methods in Civil Engineering

CE 6201 Advanced Strength of Materials

CE 6202 Methods of Structural Analysis

CE 6203 Reliability Analysis of Engineering Structures

CE 6204 Analysis of Plates & Shells

CE 6205 Theory of Structural Stability

CE 6206 Continuum Mechanics

CE 6207 Theory of Elasticity I

CE 6208 Plasticity

CE 6209 Mechanics of Composite Materials

CE 6301	Design of Reinforced Concrete Structures
CE 6302	Prestressed Concrete Structures
CE 6320	Design of Metal Structures
CE 6321	Advanced Metal Structures
CE 6401	Fundamentals of Soil Behavior
CE 6402	Theoretical Soil Mechanics
CE 6403	Geotechnical Engineering
CE 6404	Geotechnical Earthquake Engineering
CE 6405	Rock Engineering
CE 6501	Environmental Chemistry
CE 6502	Advanced Sanitary Engineering Design
CE 6503	Principles of Environmental Engineering
CE 6504	Water and Wastewater Treatment Processes
CE 6505	Environmental Impact Assessment
CE 6506	Microbiology for Environmental Engineers
CE 6507	Advanced Treatment Processes
CE 6508	Industrial Waste Treatment
CE 6509	Introduction to Hazardous Wastes
CE 6601	Open Channel Flow
CE 6602	Hydraulic Engineering
CE 6603	Design of Dams
CE 6604	Advanced Hydrology
CE 6605	Ground Water and Seepage
CE 6606	Mechanics of Water Waves
CE 6607	Water Resources Planning and Control
CE 6608	Hydraulic Modeling
CE 6609	Numerical Methods in Environmental and Water Resources
CE 6610	Pollution Transport Systems
CE 6701	Analytical Mechanics
CE 6702	Vehicle Dynamics

CE 6703	Vehicle Standards and Crash Test Analysis
CE 6704	Crash Investigation and Analysis
CE 6705	Nonlinear Finite Element Modeling and Simulation
CE 6706	Pavement & Runway Design
CE 6707	Systems Dynamics Modeling and Control
CE 6721	Traffic Engineering and Highway Safety
CE 6722	Intelligent Transportation Systems
CE 6800	Special Topics
EMSE 6410	Survey of Finance and Engineering Economics

BACHELOR OF SCIENCE IN CIVIL ENGINEERING, ENVIRONMENTAL ENGINEERING OPTION

Recommended program of study:

First Semester:

CE 1010	Introduction to Civil and Environmental Engineering
UW 1020	University Writing
SEAS 1001	Engineering Orientation
MATH 1231	Single-Variable Calculus I
CHEM 1111	General Chemistry I

One humanities or social sciences elective

Second Semester:

PHYS 1021	University Physics I
MATH 1232	Single-Variable Calculus II
MAE 1004	Engineering Drawing and Computer Graphics
CSCI 1121	Introduction to C Programming
CHEM 1112	General Chemistry II

Third Semester:

APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I

MATH 2233 Multivariable Calculus

PHYS 1022 University Physics II

One humanities or social sciences elective

Fourth Semester:

APSC 2058 Analytical Mechanics II

CE 2210 Engineering Computations

CE 2220 Introduction to the Mechanics of Solids

CE 2710 Introduction to Transportation
Engineering

GEOL 1001 Physical Geology

One humanities or social sciences elective

Fifth Semester:

APSC 3115 Engineering Analysis III

CE 3110W Civil Engineering Materials

CE 3111W Civil Engineering Materials Lab

CE 3230 Structural Theory I

MAE 3126 Fluid Mechanics I

Two humanities or social sciences elective

Sixth Semester:

CE 3240 Structural Theory 2

CE 3310 Reinforced Concrete Structures

CE 3611 Hydraulics Laboratory

CE 3520 Environmental Engineering I: Water
Resources and Water Quality

CE 3610 Hydraulics

CE 3521 Environmental Engineering Laboratory

One humanities or social sciences elective

Seventh Semester:

CE 4410 Introduction to Geotechnical
Engineering

CE 4411 Geotechnical Engineering Laboratory

CE 4320 Metal Structures

CE 4620 Hydrology and Hydraulic Design

CE 4530 Environmental Engineering II: Water
Supply and Pollution Control

One engineering elective selected from list below

Eighth Semester:

CE 4330 Contracts and Specifications

CE 4340 Design and Cost Analysis of Civil
Engineering Structures

CE 6502 Advanced Sanitary Engineering Design

Two engineering electives

A complete list of engineering electives can be found on the department's website (<http://www.cee.seas.gwu.edu/programs-degrees>).

BACHELOR OF SCIENCE IN CIVIL ENGINEERING, MEDICAL PREPARATION OPTION

Recommended program of study:

First Semester:

CE 1010 Introduction to Civil and Environmental
Engineering

UW 1020 University Writing

SEAS 1001 Engineering Orientation

MATH 1231 Single-Variable Calculus I

CHEM 1111 General Chemistry I

One humanities or social sciences elective

Second Semester:

PHYS 1021 University Physics I

MATH 1232 Single-Variable Calculus II

MAE 1004 Engineering Drawing and Computer
Graphics

CSCI 1121 Introduction to C Programming

CHEM 1112 General Chemistry II

Third Semester:

BISC 1111 Introductory Biology: Cells and
Molecules

APSC 2057 Analytical Mechanics I

APSC 2113	Engineering Analysis I
MATH 2233	Multivariable Calculus
PHYS 1022	University Physics II

One humanities or social sciences elective

Fourth Semester:

APSC 2058	Analytical Mechanics II
CE 2210	Engineering Computations
CE 2220	Introduction to the Mechanics of Solids
CE 2710	Introduction to Transportation Engineering
GEOL 1001	Physical Geology
BISC 1112	Introductory Biology: The Biology of Organisms

Fifth Semester:

CE 3230	Structural Theory I
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
MAE 3126	Fluid Mechanics I
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
ECE 2110	Circuit Theory

Sixth Semester:

CE 3240	Structural Theory 2
CE 3310	Reinforced Concrete Structures
CE 3611	Hydraulics Laboratory
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3610	Hydraulics
CE 3521	Environmental Engineering Laboratory
CHEM 2152	Organic Chemistry II
CHEM 2154	Organic Chemistry Laboratory II

Seventh Semester:

CE 4410	Introduction to Geotechnical Engineering
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CE 4411	Geotechnical Engineering Laboratory
CE 4320	Metal Structures
CE 4530	Environmental Engineering II: Water Supply and Pollution Control

One humanities or social sciences elective

One humanities or social sciences elective

Eighth Semester:

APSC 3115	Engineering Analysis III
CE 4340	Design and Cost Analysis of Civil Engineering Structures
CE 6403	Geotechnical Engineering

One humanities or social sciences elective

One humanities or social sciences elective

A complete list of engineering electives can be found on the department's website (<http://www.cee.seas.gwu.edu/programs-degrees>).

BACHELOR OF SCIENCE IN CIVIL ENGINEERING, SUSTAINABILITY OPTION

Recommended program of study:

First Semester:

CE 1010	Introduction to Civil and Environmental Engineering
UW 1020	University Writing
SEAS 1001	Engineering Orientation
MATH 1231	Single-Variable Calculus I
CHEM 1111	General Chemistry I

One humanities or social sciences elective

Second Semester:

PHYS 1021	University Physics I
MATH 1232	Single-Variable Calculus II
MAE 1004	Engineering Drawing and Computer Graphics
CSCI 1121	Introduction to C Programming

One humanities or social sciences elective

Third Semester:

APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MATH 2233	Multivariable Calculus
PHYS 1022	University Physics II
CE 2510	Environmental Sustainability

One humanities or social sciences elective

Fourth Semester:

APSC 2058	Analytical Mechanics II
CE 2210	Engineering Computations
CE 2220	Introduction to the Mechanics of Solids
CE 2710	Introduction to Transportation Engineering
GEOL 1001	Physical Geology

One humanities or social sciences elective

Fifth Semester:

APSC 3115	Engineering Analysis III
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
CE 3720	Highway Engineering and Design
MAE 3126	Fluid Mechanics I

One humanities or social sciences elective

Sixth Semester:

CE 3140	Sustainability in Engineering Materials
CE 3240	Structural Theory 2
CE 3310	Reinforced Concrete Structures
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3521	Environmental Engineering Laboratory
CE 3610	Hydraulics
CE 3611	Hydraulics Laboratory

Seventh Semester:

CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4320	Metal Structures
CE 4620	Hydrology and Hydraulic Design
CE 4530	Environmental Engineering II: Water Supply and Pollution Control

Civil engineering elective

Eighth Semester:

CE 4330	Contracts and Specifications
CE 4340	Design and Cost Analysis of Civil Engineering Structures
CE 4450	Introduction to Geo-environmental Engineering

Two engineering electives

A complete list of engineering electives can be found on the department's website (<http://www.cee.seas.gwu.edu/programs-degrees>).

BACHELOR OF SCIENCE IN CIVIL ENGINEERING, TRANSPORTATION ENGINEERING OPTION

Recommended program of study:

First Semester:

CE 1010	Introduction to Civil and Environmental Engineering
UW 1020	University Writing
SEAS 1001	Engineering Orientation
MATH 1231	Single-Variable Calculus I
CHEM 1111	General Chemistry I

One humanities or social sciences elective

Second Semester:

PHYS 1021	University Physics I
MATH 1232	Single-Variable Calculus II
MAE 1004	Engineering Drawing and Computer Graphics

CSCI 1121 Introduction to C Programming

One humanities or social sciences elective

Third Semester:

APSC 2057 Analytical Mechanics I

APSC 2113 Engineering Analysis I

MATH 2233 Multivariable Calculus

PHYS 1022 University Physics II

One humanities or social sciences elective

Fourth Semester:

APSC 2058 Analytical Mechanics II

CE 2210 Engineering Computations

CE 2220 Introduction to the Mechanics of Solids

CE 2710 Introduction to Transportation Engineering

GEOL 1001 Physical Geology

One humanities or social sciences elective

Fifth Semester:

APSC 3115 Engineering Analysis III

CE 3110W Civil Engineering Materials

CE 3111W Civil Engineering Materials Lab

CE 3230 Structural Theory I

CE 3720 Highway Engineering and Design

MAE 3126 Fluid Mechanics I

One humanities or social sciences elective

Sixth Semester:

CE 3240 Structural Theory 2

CE 3310 Reinforced Concrete Structures

CE 3611 Hydraulics Laboratory

CE 3520 Environmental Engineering I: Water Resources and Water Quality

CE 3610 Hydraulics

CE 3521 Environmental Engineering Laboratory

One humanities or social sciences elective

Seventh Semester:

CE 4410 Introduction to Geotechnical Engineering

CE 4411 Geotechnical Engineering Laboratory

CE 4320 Metal Structures

CE 4620 Hydrology and Hydraulic Design

CE 4530 Environmental Engineering II: Water Supply and Pollution Control

One engineering elective

Eighth Semester:

CE 4330 Contracts and Specifications

CE 4340 Design and Cost Analysis of Civil Engineering Structures

CE 6403 Geotechnical Engineering

Two engineering electives

A complete list of engineering electives can be found on the department's website (<http://www.cee.seas.gwu.edu/programs-degrees>).

MASTER OF SCIENCE IN CIVIL AND ENVIRONMENTAL ENGINEERING

REQUIREMENTS

The Department of Civil and Environmental Engineering administers the field of civil and environmental engineering. In addition to the entrance requirements stated above, the applicant is expected to have an undergraduate degree in engineering, the physical sciences, or applied mathematics. Minimum requirements for the degree are 33 credits of course work or 24 credits of course work and 6 credits of thesis. To be considered for departmental financial support, GRE scores are required.

Representative areas of focus leading to the Master of Science degree

Required courses

Engineering Mechanics:

APSC 6213 Analytical Methods in Engineering III

CE 6206 Continuum Mechanics

CE 6210 Introduction to Finite Element Analysis

Environmental engineering:

CE 6503	Principles of Environmental Engineering
CE 6601	Open Channel Flow
CE 6609	Numerical Methods in Environmental and Water Resources
Geotechnical engineering:	
CE 6210	Introduction to Finite Element Analysis
CE 6402	Theoretical Soil Mechanics
CE 6605	Ground Water and Seepage
Structural engineering:	
CE 6201	Advanced Strength of Materials
CE 6202	Methods of Structural Analysis
CE 6210	Introduction to Finite Element Analysis
Transportation safety engineering:	
CE 6210	Introduction to Finite Element Analysis
CE 6701	Analytical Mechanics
CE 6102	Application of Probability Methods in Civil Engineering
or CE 6722	Intelligent Transportation Systems
Water resources engineering:	
CE 6503	Principles of Environmental Engineering
CE 6601	Open Channel Flow
CE 6609	Numerical Methods in Environmental and Water Resources

COMPUTER SCIENCE

Mission Statement

The mission of the Department of Computer Science is to serve the global community by providing high-quality computer science education, research, and professional service and to advance computer technology in areas of selective excellence.

Educational Objectives

The computer science undergraduate program of study has been developed to prepare graduates who, in the years following graduation, will earn an advanced degree in computer science or related disciplines or a professional degree (such as law, business, medicine), or be gainfully employed in the computer or IT industry with the ability to apply skills and knowledge learned while an undergraduate at GW, and who will conduct themselves professionally and

ethically, work effectively in teams, and communicate effectively to both technical and non-technical audiences.

Educational Outcomes

By the time of graduation, a computer science student will have:

1. learned to apply principles from the fundamentals of computer science, including discrete structures, data structures, algorithms, and the theory of computing;
2. acquired an understanding of the hardware and software architecture of computer systems, including architecture, operating systems, databases, languages, and networks;
3. participated effectively in team projects and team activities, and acquired an understanding of:
 - a. the overall social and professional context in which computing activities take place;
 - b. the global and local impact of computing; and
 - c. professional, ethical, legal, security, and social issues and responsibilities;
4. demonstrated an application of software engineering principles through completion of a challenging capstone project requiring specification, design, and implementation; and
5. conveyed technical knowledge in an effective manner through written and oral communications.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in computer science (p. 118)
- Bachelor of Science with a major in computer science (p. 119)

GRADUATE

Master's programs

- Master of Science in the field of computer science (p. 120)
- Master of Science in the field of cybersecurity in computer science (p. 121)

Doctoral program

See the School of Engineering and Applied Science for programs leading to the doctoral degree.

CERTIFICATES

- Certificate in computer security and information assurance (p. 120)

FACULTY

Professors S.Y. Berkovich, R.S. Heller, H.-A. Choi, A. Youssef (*Chair*), B. Narahari, J.K. Hahn, R. Simha

Associate Professors S. Rotenstreich, A. Bellaachia, X. Cheng, P. Vora, N. Zhang, M. Diab

Assistant Professors G.A. Parmer, E. Drumwright, C. Monteleoni, T. Wood, G. Sibley

BACHELOR OF ARTS WITH A MAJOR IN COMPUTER SCIENCE

The Bachelor of Arts major in computer science provides a broad-based liberal arts curriculum for students who wish to augment technical knowledge with humanities, social sciences, business, communication, or management skills. Foundation courses focus on mathematics, science, software design and programming, computer systems and architecture, and algorithm design. Additional breadth or depth is afforded by selection of technical track courses that build on the foundations to provide in-depth exposure to a specific field in computer science. The program is designed for those with interests in two or more disciplines; students complete a second major or two minors in another academic department.

Second major in computer science:

Students who are not enrolled in the School of Engineering and Applied Science but wish to declare a second major in computer science must apply and be admitted to the second major program in computer science.

Criteria for admissions:

- A minimum grade of B or above in each:
 - CS1111 or CS1101 or CSci 1121, and
 - B# or above in Math1220 and Math 1221 (or a B# in Math1231)
- A minimum overall grade point average of 3.0 at the time of application to the major or minor.
- Application is due no later than the start of your 5th semester of study at GW or completion of 60th credit, whichever comes first.

Credits in residence requirement:

- At least 24 credits in computer science courses must be completed in SEAS.
- For students pursuing a minor, at least 15 credits in computer science courses must be completed at GW.

Graduation grade point average criteria:

- To satisfactorily complete a second major, or minor, in computer science, a student must have a minimum grade point average of 2.2 in all the computer science courses. See department webpage (<http://www.seas.gwu.edu/departments-computer-science>) for more information on curriculum requirements for the second major in computer science.

REQUIREMENTS

The minimum number of credits required for the major in computer science is 120; the credit total depends on the

second major or minors chosen by the student. Students interested in pursuing a computer science major with preparation for application to medical school can also choose the medical preparation option. Additional information about the Bachelor of Arts major in computer science is available online (http://www.cs.gwu.edu/academics/undergraduate_programs/ba).

Students in this program complete a second major or two minors in another department outside engineering.

Recommended plan of study:

First semester:

CSCI 1111 Introduction to Software Development

SEAS 1001 Engineering Orientation

Math requirement

Social and behavioral sciences elective

CSCI 1010 Computer Science Orientation

UW 1020

Second semester:

CSCI 1311 Discrete Structures I

CSCI 1112 Algorithms and Data Structures

Math requirement

Science requirement

Social and behavioral sciences elective

Third semester:

CSCI 2113 Software Engineering

CSCI 2461 Computer Architecture I

Science requirement

Humanities elective

Statistics requirement - one of the following:

APSC 3115 Engineering Analysis III

STAT 1051 Introduction to Business and Economic Statistics

STAT 1053 Introduction to Statistics in Social Science

Fourth semester:

CSCI 2441 Database Systems and Team Projects

CSCI 3410	Systems Programming
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Computer Science elective

Science requirement

Statistics requirement

CSCI 3362	Probability for Computer Science
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or APSC 3115	Engineering Analysis III
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or STAT 4157	Introduction to Mathematical Statistics I
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Fifth semester:

Computer science restricted elective

Creative arts elective

Second major electives (9 credits)

Sixth semester:

Technical track elective

Humanities elective

Foreign languages and culture elective

Second major electives (6 credits)

Seventh semester:

Computer science restricted elective

Technical track elective

Foreign languages and culture elective

Second major electives (6 credits)

Eighth semester:

Technical track elective

Humanities elective

Unrestricted elective

Second major electives (6 credits)

BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER SCIENCE

The program combines software development, computer systems and architecture, algorithms, project design, science, and mathematics to provide a strong background in the foundations that underlie computer science. Students are prepared to design and implement software needed for Internet operations, computer graphics and animation, secure systems, and applications for small, large, and embedded

systems. In consultation with the advisor, students choose a technical track and a non-technical track. The technical track provides depth in a particular area of computer science, and the non-technical track is intended to enable the student to stay current with our rapidly evolving field and to establish the relevance of their studies in our global and changing environment.

Medical Preparation Option in Computer Science

This option is for students interested in pursuing a computer science major with preparation for application to a medical school by combining additional natural science course work with computer science course requirements.

REQUIREMENTS

Recommended program of study:

First Semester:

UW 1020	University Writing
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CSCI 1010	Computer Science Orientation
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CSCI 1111	Introduction to Software Development
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SEAS 1001	Engineering Orientation
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Math requirement

Humanities or social sciences elective

Second Semester:

CSCI 1311	Discrete Structures I
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CSCI 1112	Algorithms and Data Structures
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Math requirement

Science requirement

Humanities or social sciences elective

Third Semester:

CSCI 2312	Discrete Structures II
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CSCI 2461	Computer Architecture I
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CSCI 2113	Software Engineering
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Science requirement

Humanities or social sciences elective

Fourth Semester:

CSCI 3410	Systems Programming
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CSCI 2441	Database Systems and Team Projects
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Computer science elective

Science requirement

Statistics requirement - one of the following:

CSCI 3362 Probability for Computer Science

APSC 3115 Engineering Analysis III

STAT 1051 Introduction to Business and Economic Statistics

STAT 1053 Introduction to Statistics in Social Science

Fifth Semester:

CSCI 3313 Foundations of Computing

CSCI 3212 Algorithms

CSCI 3411 Operating Systems

Humanities or social sciences elective

Sixth Semester:

Technical track elective

Non-technical track elective

Math or science elective

Humanities or social sciences elective

Unrestricted elective

Seventh Semester:

CSCI 4243 Capstone Design Project I

Technical track elective

Non-technical track elective

Humanities or social sciences elective

Unrestricted elective

Eighth Semester:

CSCI 4244 Capstone Design Project II

Technical track elective

Non-technical track elective

Unrestricted electives

Mathematics requirements can be met by taking MATH 1220 Calculus with Precalculus I-MATH 1221 Calculus with Precalculus II and MATH 1232 Single-Variable Calculus II

or by taking MATH 1231 Single-Variable Calculus I and MATH 1232 Single-Variable Calculus II. All students must take two math courses not counting MATH 1220 Calculus with Precalculus I; students who take MATH 1220 Calculus with Precalculus I must take it as one of their unrestricted electives. Science requirements can be met by choosing from BISC 1111 Introductory Biology: Cells and Molecules-BISC 1112 Introductory Biology: The Biology of Organisms, CHEM 1111 General Chemistry I-CHEM 1112 General Chemistry II, and PHYS 1021 University Physics I-PHYS 1022 University Physics II. The three science requirement courses must include a two-course sequence.

Some examples of technical tracks include computer security and information assurance, digital media, foundations and theory, biomedical computing, systems, software engineering and applications and research. Examples of non-technical tracks include business, project management, global engineering, pre-law, and environment and climate change. Students may define their own non-technical track in consultation with their advisor. More information on the tracks and track requirements can be found online (http://www.cs.gwu.edu/academics/undergraduate_programs/technical).

CERTIFICATE IN COMPUTER SECURITY AND INFORMATION ASSURANCE

REQUIREMENTS

A certificate program in computer security and information assurance is offered.

MASTER OF SCIENCE IN THE FIELD OF COMPUTER SCIENCE

The Department of Computer Science administers the fields of computer science and of cybersecurity in computer science. Both thesis and non-thesis options are available. In addition to the entrance requirements, students are expected to be adequately prepared in the basic physical sciences and in mathematics (one year each of university laboratory science and of math beyond precalculus), and to have taken a course in computer programming using a structured language and CSCI 1112, CSCI 1311, and CSCI 2461 or their equivalents

Graduate students are required to attend several department colloquia each semester. These are intended to broaden the student's professional outlook and to encourage interaction with the faculty. Schedules are posted.

The program of study in computer science requires a minimum of 30 credit hours, of which at least 24 credits must be at the 6000 level.

CSCI 6212	Design and Analysis of Algorithms
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CSCI 6221	Advanced Software Paradigms
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CSCI 6461	Computer System Architecture
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Electives

No area of concentration is required; rather, students can tailor their choice of electives to best meet their goals, subject to departmental approval. Normally, no more than two courses may be taken outside of those offered by the department.

MASTER OF SCIENCE IN THE FIELD OF CYBERSECURITY IN COMPUTER SCIENCE

The Department of Computer Science administers the fields of computer science and of cybersecurity in computer science. Both thesis and non-thesis options are available. In addition to the entrance requirements stated above, students are expected to be adequately prepared in the basic physical sciences and in mathematics (one year each of university laboratory science and of math beyond precalculus), and to have taken a course in computer programming using a structured language and CSCI 1112 Algorithms and Data Structures, CSCI 1311 Discrete Structures I, and CSCI 2461 Computer Architecture I or their equivalents.

Graduate students are required to attend several department colloquia each semester. These are intended to broaden the student's professional outlook and to encourage interaction with the faculty. Schedules are posted.

The program of study in cybersecurity in computer science requires a minimum of 30 credits, of which at least 24 credits must be at the 6000 level.

CSCI 6212	Design and Analysis of Algorithms
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CSCI 6221	Advanced Software Paradigms
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CSCI 6461	Computer System Architecture
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EMSE 6540	Management of Information and Systems Security
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Four electives from designated cybersecurity-related courses, including at least two from the Computer Science Department, of which at least one course is indicated as applied cryptography

Normally, no more than three courses may be taken outside of those offered by the department.

ELECTRICAL AND COMPUTER ENGINEERING

OVERVIEW

Mission Statement

The mission of the Department of Electrical and Computer Engineering is to motivate and inspire our students by providing high-caliber, fully integrated programs in electrical, computer, and biomedical engineering in order to provide leadership in a rapidly evolving global information society in the service of humanity and to advance the state of knowledge in our disciplines by actively pursuing scholarly research for publication and dissemination.

Educational Objectives

The objectives of the electrical and computer engineering undergraduate program of study are to educate students in the principles of engineering, including cognizance of their responsibilities as members of society. The engineering education is based on the sciences and the principles of design. Social responsibilities are instilled through a balanced program in the humanities and social sciences as well as coverage of specific topics in professional ethics and social responsibilities. The programs provide students with a solid foundation in electrical, computer, and biomedical engineering through a balanced curriculum integrating the underlying scientific and mathematical knowledge with the latest technological developments. The curriculum is designed to produce engineers capable of functioning in the present technological environment and of adapting to future directions of the profession. Specifically, the programs aim to teach students how to analyze and implement complex interdisciplinary engineering projects; to give students a strong foundation for graduate studies in their field; to prepare students for competitive and challenging industrial applications; to teach students how to use state-of-the-art computer tools for solving engineering problems; to expose students to hands-on engineering experience through laboratory courses; to cultivate students' abilities to communicate and work effectively in teams; and to help students develop an understanding of the ethical issues and global perspectives arising in the practice of the engineering profession.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in biomedical engineering (p. 122)
- Bachelor of Science with a major in computer engineering (p. 123)
- Bachelor of Science with a major in electrical engineering (p. 124)

GRADUATE

Master's program

- (<http://gwu-preview.courseleaf.com/engineering-applied-science/electrical-computer-engineering/ms>) Master of Science in the field of biomedical engineering (p. 125)
- Master of Science in the field of computer engineering (p. 126)
- Master of Science in the field of electrical engineering (p. 126)
- Master of Science in the field of telecommunications engineering (p. 127)

Professional programs (<http://gwu-preview.courseleaf.com/engineering-applied-science/electrical-computer-engineering/ms>)

See the School of Engineering and Applied Science for programs leading to the professional degree.

Doctoral program

See the School of Engineering and Applied Science for programs leading to the doctoral degree.

CERTIFICATES

- Certificate in the field of high-performance computing (p. 128)

FACULTY

Professors H.J. Helgert, R.H. Lang, N. Kyriakopoulos, E. Della Torre, R.J. Harrington, W. Wasylkiwskyj, M.H. Loew, R.L. Carroll, Jr., M.E. Zaghoul, B.R. Vojcic, K.B. Eom, C.E. Korman, T. El-Ghazawi, L. Bennett (*Research*), S. Subramaniam, T.J. Manuccia (*Teaching*), S. Ahmadi (*Teaching*)

Associate Professors M. Doroslovacki, J.M. Zara, M.W. Kay, V. Zderic, H.H. Huang

Assistant Professors G.P. Venkataramani, Z. Li, T. Lan, E. Simsek, V. Sorger, A. Etemadi

Adjunct Professor L.J. Ippolito

Professorial Lecturers A. Mehrotra, D. Nagel, S.A. Torricco

BACHELOR OF SCIENCE WITH A MAJOR IN BIOMEDICAL ENGINEERING

Offered by the Department of Electrical and Computer Engineering, this innovative program provides a strong foundation in the basic sciences as well as the theory and practice of biomedical engineering. In consultation with their faculty advisor, students choose an area of specialization from topics including biomechanics, instrumentation, and medical

preparation. Distinguishing features of the program are its specialty laboratories, summer internships in metropolitan-area private or federal laboratories, and a capstone design sequence.

REQUIREMENTS

Recommended program of study:

First Semester:

BISC 1111	Introductory Biology: Cells and Molecules
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CHEM 1111	General Chemistry I
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ECE 1010	Introduction to Electrical, Computer, and Biomedical Engineering
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MATH 1231	Single-Variable Calculus I
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SEAS 1001	Engineering Orientation
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UW 1020	University Writing
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Second Semester:

BISC 1112	Introductory Biology: The Biology of Organisms
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CHEM 1112	General Chemistry II
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ECE 1020	Introduction to Electrical, Computer, and Biomedical Engineering
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MATH 1232	Single-Variable Calculus II
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PHYS 1021	University Physics I
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Third Semester:

APSC 2113	Engineering Analysis I
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ECE 2110	Circuit Theory
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ECE 2810	Biomedical Engineering Seminar I-II
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MATH 2233	Multivariable Calculus
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PHYS 1022	University Physics II
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Fourth Semester:

ECE 1120	C Programming for ECE
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ECE 2115	Engineering Electronics
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ECE 2140	Design of Logic Systems I
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ECE 2210	Circuits, Signals, and Systems
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ECE 2815	Biomedical Engineering Seminar I-II
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Fifth Semester:

ECE 1125	Data Structures&Algorithms ECE
ECE 3220	Intro to Digital Signal Proces
ECE 3820	Principles and Practice of Biomedical Engineering
ECE 3910	Capstone Design Preparation
ECE 4820	Anatomy and Physiology for Engineers

Technical Elective

Sixth Semester:

APSC 3115	Engineering Analysis III
ECE 3915	Electrical, Computer, and Biomedical Engineering Capstone Project Lab I

Two Humanities and/or Social Sciences Electives

Two Technical Electives

Seventh Semester:

ECE 4920	Electrical, Computer, and Biomedical Engineering Capstone Project Lab II
MAE 4168	Intro. to Biomaterials
PHYS 2127	Biophysics: Macroscopic Physics in the Life Sciences

Humanities and/or Social Sciences Elective

Technical Elective

Eighth Semester:

ECE 4925	Electrical, Computer, and Biomedical Engineering Capstone Project Lab III
PHIL 2135	Ethics in Business and the Professions
PHYS 2128	Biophysics: Microscopic Physics in the Life Sciences

Humanities and/or Social Sciences Elective

Technical Elective

All technical electives must be approved by the academic advisor.

BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER ENGINEERING

Computer engineering combines electronic design, computer architecture, programming of computing systems, computer networks, and applied mathematics. Students in the program are prepared in the theory and application of hardware and software design, computer networks, embedded systems, and very large scale integrated (VLSI) circuit design and applications. Students can take electives in advanced topics, such as optical networks, broadband wireless networks, and technologies for the next generation of information systems.

REQUIREMENTS

First Semester:

CHEM 1111	General Chemistry I
ECE 1010	Introduction to Electrical, Computer, and Biomedical Engineering

MATH 1231	Single-Variable Calculus I
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SEAS 1001	Engineering Orientation
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UW 1020	University Writing
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Humanities and/or Social Sciences Elective

Second Semester:

CSCI 1311	Discrete Structures I
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ECE 1020	Introduction to Electrical, Computer, and Biomedical Engineering
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ECE 1120	C Programming for ECE
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MATH 1232	Single-Variable Calculus II
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PHYS 1021	University Physics I
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Humanities and/or Social Sciences Elective

Third Semester:

APSC 2113	Engineering Analysis I
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ECE 1125	Data Structures&Algorithms ECE
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ECE 2110	Circuit Theory
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ECE 2120	Engineering Seminar
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MATH 2233	Multivariable Calculus
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PHYS 1022	University Physics II
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Fourth Semester:

APSC 3115 Engineering Analysis III

ECE 2115 Engineering Electronics

ECE 2140 Design of Logic Systems I

ECE 2210 Circuits, Signals, and Systems

Humanities and/or Social Sciences Elective

Fifth Semester:

CSCI 3411 Operating Systems

ECE 3130 Digital Electronics and Design

ECE 3220 Intro to Digital Signal Proces

ECE 3515 Computer Organization

ECE 3520 Microprocessors: Software, Hardware, and Interfacing

ECE 3910 Capstone Design Preparation

Sixth Semester:

ECE 3135 Design of Logic Systems II

ECE 3310 Introduction to Electromagnetics

ECE 3415 Introduction to Computer Networks

ECE 3425 Data Communications Laboratory

ECE 3525 Introduction to Embedded Systems

ECE 3915 Electrical, Computer, and Biomedical Engineering Capstone Project Lab I

Humanities and/or Social Sciences Elective

Seventh Semester:

ECE 4140 VLSI Design and Simulation

ECE 4535 Computer Architecture and Design

ECE 4920 Electrical, Computer, and Biomedical Engineering Capstone Project Lab II

Humanities and/or Social Sciences Elective

Eighth Semester:

ECE 4150 ASIC Design and Testing of VLSI Circuits

ECE 4925 Electrical, Computer, and Biomedical Engineering Capstone Project Lab III

PHIL 2135 Ethics in Business and the Professions

Two Technical Electives

The Humanities and Social Sciences electives must include three 3-credit courses in the social sciences and two 3-credit courses in the humanities. Three 3-credit technical courses must be chosen with the approval of the advisor from advanced undergraduate or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences. At least one of the technical electives must be an upper level math or science course. More information can be found here (<http://www.ece.seas.gwu.edu/current/undergraduate/computerengineering.html>).

BACHELOR OF SCIENCE WITH A MAJOR IN ELECTRICAL ENGINEERING

Electrical engineers design the enabling technology for all applications of electricity in society; some examples are energy, telecommunications, including the Internet, biomedical instrumentation, and electromagnetic applications. The program focuses on signal processing; communication theory and practice; voice, data, video and multimedia communication networks; very large scale integrated (VLSI) circuit design and applications; and control and power systems. Students can take electives in advanced topics, such as optical networks, broadband wireless networks, and technologies for the next generation of information systems.

REQUIREMENTS

Recommended program of study:

First Semester:

CHEM 1111 General Chemistry I

ECE 1010 Introduction to Electrical, Computer, and Biomedical Engineering

MATH 1231 Single-Variable Calculus I

SEAS 1001 Engineering Orientation

UW 1020 University Writing

Humanities and/or Social Sciences Elective

Second Semester:

ECE 1020 Introduction to Electrical, Computer, and Biomedical Engineering

ECE 1120 C Programming for ECE

PHYS 1021 University Physics I

Two Humanities and/or Social Sciences Electives

Third Semester:

APSC 2113 Engineering Analysis I

ECE 1125 Data Structures&Algorithms ECE

ECE 2110 Circuit Theory

ECE 2120 Engineering Seminar

MATH 2233 Multivariable Calculus

PHYS 1022 University Physics II

Fourth Semester:

APSC 2114 Engineering Analysis II

ECE 2115 Engineering Electronics

ECE 2140 Design of Logic Systems I

ECE 2210 Circuits, Signals, and Systems

Humanities and/or Social Sciences Elective

Fifth Semester:

APSC 3115 Engineering Analysis III

ECE 3130 Digital Electronics and Design

ECE 3220 Intro to Digital Signal Proces

ECE 3315 Fields and Waves I

ECE 3520 Microprocessors: Software, Hardware, and Interfacing

ECE 3910 Capstone Design Preparation

Sixth Semester:

ECE 3125 Analog Electronics Design

ECE 3135 Design of Logic Systems II

ECE 3410 Communications Engineering

ECE 3915 Electrical, Computer, and Biomedical Engineering Capstone Project Lab I

ECE 4320 Fields and Waves II

Seventh Semester:

ECE 4710 Control Systems Design

ECE 4920 Electrical, Computer, and Biomedical Engineering Capstone Project Lab II

Technical Elective

Two ECE restricted electives

Eighth Semester:

ECE 4610 Electrical Energy Conversion

ECE 4925 Electrical, Computer, and Biomedical Engineering Capstone Project Lab III

PHIL 2135 Ethics in Business and the Professions

Two Technical Electives

Humanities and/or Social Sciences Elective

The Humanities and Social Sciences electives must include three 3-credit courses in the social sciences and two 3-credit courses in the humanities. The Electrical and Computer Engineering electives must be selected from upper level ECE courses. Three 3-credit technical courses must be chosen with the approval of the advisor from advanced undergraduate or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences. More information can be found here (<http://www.ece.seas.gwu.edu/current/undergraduate/electricalengineering.html>).

The Department of Electrical and Computer Engineering also offers the Bachelor of Science major in electrical engineering with the options listed below. More information can be found online (<http://www.ece.seas.gwu.edu/current/undergraduate/electricalengineering.html>).

Energy Option in Electrical Engineering

The energy option leads to a bachelor's degree in electrical engineering and prepares the student to work in technical energy fields such as electric utility companies and in research into improved methods of generation, transmission, and distribution of electrical energy.

Medical Preparation Option in Electrical Engineering

The medical preparation option leads to a bachelor's degree in electrical engineering and prepares the student for application to medical school. The student is also prepared to work in various health sciences fields, to conduct research toward development of electronic equipment to assist in diagnosing and treating disease, or to continue as a graduate student in engineering with exceptional qualifications for biomedical engineering.

MASTER OF SCIENCE IN THE FIELD OF BIOMEDICAL ENGINEERING

OVERVIEW

The Department of Electrical and Computer Engineering administers the fields of biomedical engineering, computer engineering, electrical engineering, and telecommunications

engineering. Both thesis and non-thesis options are available. In addition to the entrance requirements for the degree listed above, students are required to have a bachelor's degree in electrical engineering, computer engineering, biomedical engineering, or computer science and be adequately prepared in the basic physical sciences and in mathematics. Students with a bachelor's degree in another field and a basic knowledge of

1. mathematics and
2. electrical engineering, computer engineering, biomedical engineering, or computer science may be admitted, with a set of deficiency courses to be determined by the student's advisor.

REQUIREMENTS

All Master of Science degree students in biomedical, computer, or electrical engineering must complete 30 credit hours. For students pursuing a thesis, 24 credits of course work and 6 hours of thesis research must be completed. For non-thesis students, 30 credits of course work must be completed. Students will choose courses based on their area of focus. Normally, no more than two courses taken outside of the Department of Electrical and Computer Engineering may be counted toward the requirements for the graduate degree. A maximum of three ECE courses at the 3000 and 4000 level may be counted toward the requirements for the degree, provided that an indication of "May be taken for graduate credit" is in the course description found in the Undergraduate Programs Bulletin. Every ECE graduate degree student must register for the following 0-credit colloquium course: ECE 6065 Colloquium. Students satisfy the requirements for this course by attending five colloquium seminars, workshops, or symposia sponsored by the Department of Electrical and Computer Engineering.

Areas of focus leading to the Master of Science degree include medical imaging and medical instrumentation.

MASTER OF SCIENCE IN THE FIELD OF COMPUTER ENGINEERING

OVERVIEW

The Department of Electrical and Computer Engineering administers the fields of biomedical engineering, computer engineering, electrical engineering, and telecommunications engineering. Both thesis and non-thesis options are available. In addition to the entrance requirements for the degree listed above, students are required to have a bachelor's degree in electrical engineering, computer engineering, biomedical engineering, or computer science and be adequately prepared in the basic physical sciences and in mathematics.

Students with a bachelor's degree in another field and a basic knowledge of

1. mathematics and
2. electrical engineering, computer engineering, biomedical engineering, or computer science may be admitted, with a set of deficiency courses to be determined by the student's advisor.

REQUIREMENTS

All Master of Science degree students in biomedical, computer, or electrical engineering must complete 30 credit hours. For students pursuing a thesis, 24 credits of course work and 6 hours of thesis research must be completed. For non-thesis students, 30 credits of course work must be completed. Students will choose courses based on their area of focus. Normally, no more than two courses taken outside of the Department of Electrical and Computer Engineering may be counted toward the requirements for the graduate degree. A maximum of three ECE courses at the 3000 and 4000 level may be counted toward the requirements for the degree, provided that an indication of "May be taken for graduate credit" is in the course description found in the Undergraduate Programs Bulletin. Every ECE graduate degree student must register for the following 0-credit colloquium course: ECE 6065 Colloquium. Students satisfy the requirements for this course by attending five colloquium seminars, workshops, or symposia sponsored by the Department of Electrical and Computer Engineering.

Areas of focus leading to the Master of Science degree include computer architecture and high-performance computing, and MEMS, electronics, and photonics.

MASTER OF SCIENCE IN THE FIELD OF ELECTRICAL ENGINEERING

OVERVIEW

The Department of Electrical and Computer Engineering administers the fields of biomedical engineering, computer engineering, electrical engineering, and telecommunications engineering. Both thesis and non-thesis options are available. In addition to the entrance requirements for the degree listed above, students are required to have a bachelor's degree in electrical engineering, computer engineering, biomedical engineering, or computer science and be adequately prepared in the basic physical sciences and in mathematics. Students with a bachelor's degree in another field and a basic knowledge of

1. mathematics and
2. electrical engineering, computer engineering, biomedical engineering, or computer science may be admitted,

with a set of deficiency courses to be determined by the student's advisor.

REQUIREMENTS

All Master of Science degree students in biomedical, computer, or electrical engineering must complete 30 credit hours. For students pursuing a thesis, 24 credits of course work and 6 hours of thesis research must be completed. For non-thesis students, 30 credits of course work must be completed. Students will choose courses based on their area of focus. Normally, no more than two courses taken outside of the Department of Electrical and Computer Engineering may be counted toward the requirements for the graduate degree. A maximum of three ECE courses at the 3000 and 4000 level may be counted toward the requirements for the degree, provided that an indication of "May be taken for graduate credit" is in the course description found in the Undergraduate Programs Bulletin. Every ECE graduate degree student must register for the following 0-credit colloquium course: ECE 6065 Colloquium. Students satisfy the requirements for this course by attending five colloquium seminars, workshops, or symposia sponsored by the Department of Electrical and Computer Engineering.

Areas of focus leading to the Master of Science degree include communications and networks; electrical power and energy, electromagnetics, radiation systems, and microwave engineering; electronics, photonics, and MEMS; and signal and image processing, systems, and controls.

MASTER OF SCIENCE IN THE FIELD OF TELECOMMUNICATIONS ENGINEERING

OVERVIEW

The Department of Electrical and Computer Engineering administers the fields of biomedical engineering, computer engineering, electrical engineering, and telecommunications engineering. Both thesis and non-thesis options are available. In addition to the entrance requirements for the degree listed above, students are required to have a bachelor's degree in electrical engineering, computer engineering, biomedical engineering, or computer science and be adequately prepared in the basic physical sciences and in mathematics. Students with a bachelor's degree in another field and a basic knowledge of

1. mathematics and
2. electrical engineering, computer engineering, biomedical engineering, or computer science may be admitted, with a set of deficiency courses to be determined by the student's advisor.

REQUIREMENTS

All Master of Science degree students in biomedical, computer, or electrical engineering must complete 30 credit hours. For students pursuing a thesis, 24 credits of course work and 6 hours of thesis research must be completed. For non-thesis students, 30 credits of course work must be completed. Students will choose courses based on their area of focus. Normally, no more than two courses taken outside of the Department of Electrical and Computer Engineering may be counted toward the requirements for the graduate degree. A maximum of three ECE courses at the 3000 and 4000 level may be counted toward the requirements for the degree, provided that an indication of "May be taken for graduate credit" is in the course description found in the Undergraduate Programs Bulletin. Every ECE graduate degree student must register for the following 0-credit colloquium course: ECE 6065 Colloquium. Students satisfy the requirements for this course by attending five colloquium seminars, workshops, or symposia sponsored by the Department of Electrical and Computer Engineering.

The student in telecommunications engineering is required to complete at least eight of the below courses. Courses with an asterisk (*) are required courses.

ECE 3430	Simulation of Communications Systems
ECE 6005	Microcomputer Systems Architecture
ECE 6015	Stochastic Processes in Engineering
ECE 6035	Introduction to Computer Networks *
ECE 6130	Grid and Cloud Computing
ECE 6545	Information Transmission Systems *
ECE 6550	Advanced Network Architectures *
ECE 6555	Networks Protocols *
ECE 6560	Network Performance Analysis
ECE 6565	Telecommunications Security *
ECE 6570	Telecommunications Security Protocols
ECE 6575	Optical Communication Networks
ECE 6580	Wireless Networks *
ECE 6065	Colloquium

CERTIFICATE IN THE FIELD OF HIGH-PERFORMANCE COMPUTING

The certificate in high-performance computing offers an alternative to a Master of Science degree program for professionals who wish to align their background with the rapid changes in advanced computing technologies and to expand their education beyond the Bachelor's degree.

REQUIREMENTS

The certificate is comprised of three graduate courses, or 9 credits. Two of these courses (ECE 6105 Introduction to High-Performance Computing, ECE 6130 Grid and Cloud Computing) are required core courses covering topics in high-performance, cloud and distributed computing. One additional course is selected from a set of electives which also includes computational courses from other participating departments.

Credits taken for the certificate degree may be also used towards a graduate program degree, if approved by the student's academic advisor.

ENGINEERING MANAGEMENT AND SYSTEMS ENGINEERING

Mission Statement

The mission of the Department of Engineering Management and Systems Engineering is to deliver an integrated program of research, teaching, and public service to the technology community. The Department develops creative leadership to bridge dynamic, complex technologies and societal needs. This includes delivering instruction in the management of technology and in systems engineering, operations research, and allied fields to undergraduate and graduate students who are preparing to assume leadership roles as technology professionals. Our education programs provide an understanding of the managerial role, analysis of the diverse functions of technology-based organizations, and instruction in modern management and mathematical analysis and modeling tools as they apply to formulating and executing decisions in engineering and scientific organizations. Our research programs feature research in the management of technology; fundamental and applied research in systems engineering and operations research, with a particularly strong interest in stochastic analysis and system optimization; sponsorship from government, industry, and the technology community; and a strong presence in refereed professional journals and leadership in professional societies.

Educational Objectives

The systems engineering undergraduate program of study prepares its graduates for work as systems engineers in a variety of professional fields and for continuing study at the graduate level. The educational objectives include

conveying the expectations of an ethical and professional work environment, so that graduates will be prepared to fully engage with both technical and non-technical colleagues.

Educational Outcomes

By the time of graduation, a systems engineering student will have:

1. learned to apply the fundamentals of systems engineering, including needs elicitation, requirements elaboration, design option analyses, architectural trade studies, system traceability methods, configuration baseline and management, and engineering change process;
2. acquired an understanding of complexity in large systems development and operations;
3. developed communications skills appropriate to the conveyance of complex systems information to a variety of audiences;
4. participated effectively in team-based projects; and
5. demonstrated the application of systems engineering skills through the development and completion of a large capstone project.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in applied science and technology (p. 129)
- Bachelor of Science with a major in systems engineering (p. 130)

GRADUATE

Master's program

- Master of Science in the field of engineering management and systems engineering (p. 131)

Doctoral program

See the School of Engineering and Applied Science for programs leading to the doctoral degree.

CERTIFICATES

Certificate programs offered by the Department of Engineering Management and Systems Engineering include homeland security emergency preparedness and response, emergency management and public health, engineering and technology management, knowledge and information management, and systems engineering.

FACULTY

Professors S. Sarkani, T.A. Mazzuchi (*Chair*), J.P. Deason, J.R. van Dorp

Associate Professors M.R. Duffey, H. Abeledo, J.A. Barbera, G.L. Shaw, J.J. Ryan

Assistant Professors J.R. Santos, R.A. Francis, Z. Szajnfarber, E. Gralla, E. Shittu, D. Broniatowski

Professorial Lecturers D.J. Ryan, R.C. West, T.H. Holzer, D.R. Gallay, Jr., J.S. Wasek, J.H. Chang, J.V. Shah, R.M. Andersen, M.J. Armstrong

BACHELOR OF ARTS WITH A MAJOR IN APPLIED SCIENCE AND TECHNOLOGY

The Bachelor of Arts major in applied science and technology is a broad-based engineering-oriented program, with a breadth of liberal arts, for students who intend to make their careers in fields allied to science and technology and/or continue their education toward professional careers in law, medicine, business, teaching, or the media. It is designed to help students pursue their goals in a world that relies more and more upon science and technology.

REQUIREMENTS

First Semester:

UW 1020 University Writing

EMSE 1001 Introduction to Systems Analysis

SEAS 1001 Engineering Orientation

CHEM 1111 General Chemistry I

MATH 1231 Single-Variable Calculus I

Humanities or social sciences elective

Second Semester:

CSCI 1121 Introduction to C Programming

or CSCI 1112 Algorithms and Data Structures

CHEM 1112 General Chemistry II

MATH 1232 Single-Variable Calculus II

Humanities or social sciences elective

Arts elective

Third Semester:

CSCI 1132 Data Structures and Software Design

or CSCI 1112 Algorithms and Data Structures

PHYS 1011 General Physics I

or PHYS 1021 University Physics I

Literature elective

Two unrestricted electives

Fourth Semester:

APSC 3115 Engineering Analysis III

EMSE 4410 Survey of Finance and Engineering Economics

PHYS 1012 General Physics II

or PHYS 1022 University Physics II

Literature elective

Unrestricted elective

Fifth Semester:

BISC 1111 Introductory Biology: Cells and Molecules

EMSE 3850 Quantitative Models in Systems Engineering

COMM 1040 Public Communication

or COMM 1041 Interpersonal Communication

or COMM 1042 Business and Professional Speaking

MAE 1004 Engineering Drawing and Computer Graphics

Allied minor elective

Sixth Semester:

BISC 1112 Introductory Biology: The Biology of Organisms

ISTM 4121 Database Design and Applications

Two allied minor electives

Humanities or social sciences elective

Seventh Semester:

MAE 3192 Manufacturing Processes and Systems

EMSE 3740 Systems Thinking and Policy Modeling I

EMSE 6005 Organizational Behavior for the Engineering Manager

Allied minor elective

SEAS elective

Eighth Semester:

CE 4330 Contracts and Specifications

Allied minor elective

Humanities or social sciences elective

Three unrestricted electives

Electives

Electives in specified categories are chosen from lists of courses available from the advisor. Allied minor electives are selected, with the approval of the advisor, to form a coherent and meaningful program of 15 credit hours. Popular selections include biology, communication, computer science, design, economics, engineering, environmental studies, finance, international business, management, mathematics, medical preparation, psychology, statistics, and operations research.

BACHELOR OF SCIENCE WITH A MAJOR IN SYSTEMS ENGINEERING

The multidisciplinary field of systems engineering applies engineering techniques and mathematical methods to improve planning and decision making in organizational systems composed of people, machines, and procedures. By observing, understanding, modeling, and predicting the behavior of such systems, practitioners of systems engineering assist the decision-making process that seeks to design and operate the systems optimally. Systems engineering finds application in many areas, including communications, energy, environment, finance, health care, information technology, marketing, national defense, project management, software development, and transportation.

Each student must participate in an appropriate internship/co-op experience during the last two years of the program. This requirement may be satisfied by an approved full-time summer position after the second or third year or by one or two approved part-time positions requiring 15–20 hours per week during two of the final four semesters. A position obtained through the GW Career Center (<http://gwired.gwu.edu/career>) will usually be acceptable; the position may be either paid or unpaid.

The systems engineering program is designed to provide the student a broad and solid education in the basics of mathematical modeling, software and information systems, and the treatment of uncertainty. Analytical thinking is stressed in order to prepare the student for graduate education or productive professional employment. The program is planned to develop the student's communication skills and awareness of the current professional world.

REQUIREMENTS

Recommended program of study:

First Semester:

UW 1020 University Writing

CSCI 1111 Introduction to Software Development

EMSE 1001 Introduction to Systems Analysis

SEAS 1001 Engineering Orientation

MATH 1231 Single-Variable Calculus I

Science elective

Second Semester:

CSCI 1112 Algorithms and Data Structures

ECON 1011 Principles of Economics I

MATH 1232 Single-Variable Calculus II

Science elective

Humanities or social sciences elective

Third Semester:

APSC 2113 Engineering Analysis I

COMM 1040 Public Communication

COMM 1041 Interpersonal Communication

or COMM 1042 Business and Professional Speaking

CSCI 2113 Software Engineering

MATH 2233 Multivariable Calculus

Science elective

Fourth Semester:

APSC 3115 Engineering Analysis III

CSCI 2441 Database Systems and Team Projects

EMSE 2705 Mathematics in Operations Research

EMSE 2801 Fundamentals of Systems Engineering

Humanities or social sciences elective

Fifth Semester:

EMSE 3850 Quantitative Models in Systems
Engineering

EMSE 3740	Systems Thinking and Policy Modeling I
EMSE 3815	Requirements Analysis and Elicitation
EMSE 4755	Quality Control and Acceptance Sampling
Humanities or social sciences elective	
Technical elective	
Sixth Semester:	
EMSE 3770	
EMSE 3820	
EMSE 3855	Critical Infrastructure Systems
EMSE 4410	Survey of Finance and Engineering Economics
Technical elective	
Humanities or social sciences elective	
Seventh Semester:	
EMSE 3760	Discrete Systems Simulation
EMSE 4190	Senior Project in Systems Engineering I
EMSE 4710	Applied Optimization Modeling
STAT 2118	Regression Analysis
Technical elective	
Eighth Semester:	
EMSE 4190	Senior Project in Systems Engineering I
EMSE 4191	Senior Project in Systems Engineering II
STAT 2183	Statistical Computing Packages
Three technical electives	

Science requirements can be met by choosing from:

BISC 1111 & BISC 1112	Introductory Biology: Cells and Molecules and Introductory Biology: The Biology of Organisms
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II
PHYS 1021 & PHYS 1022	University Physics I and University Physics II

The three science requirement courses must include a two-course sequence.

Technical electives

Each systems engineering major will gain specific expertise in a chosen technical area by taking a six-course sequence leading to a minor or secondary field from another department of the University. Technical electives are selected with the approval of the student's academic advisor. Areas frequently chosen are computer science, economics, finance, management, mathematics, naval science, statistics, and specific fields of engineering; consult the advisor for other approved areas and their requirements.

Medical preparation option

The medical preparation option leads to a bachelor's degree in systems engineering and quantitatively prepares students for medical careers through a program that emphasizes decision modeling. Decision modeling is increasingly applicable to the medical field because of the growing use of computers and information systems in medicine and the interplay of diagnosis, treatment, and economics.

MASTER OF SCIENCE IN THE FIELD OF ENGINEERING MANAGEMENT AND SYSTEMS ENGINEERING

The Department of Engineering Management and Systems Engineering administers the field of engineering management and the field of systems engineering.

The Department requires that the applicant have a suitable bachelor's degree in an area such as engineering, a physical science, or mathematics from a recognized university with a *B* or better average for the last two years of undergraduate study. A grade of *B–* or better in MATH 1232 Single-Variable Calculus II and APSC 3115 Engineering Analysis III, or their equivalents, is prerequisite to admission to all graduate degree programs offered by the Department. An applicant who does not meet these requirements may be considered for conditional admission; if the requirements have not been satisfied within the first two semesters of enrollment, the student may be barred from further enrollment within the Department. The Department recognizes significant experience in work situations relevant to the engineering management and systems engineering fields of study. For applicants with a different bachelor's degree than those mentioned above, admission may be considered predicated on significant work experience in the representative areas of focus below.

Each area of focus has specified course requirements, with electives as part of the program.

REQUIREMENTS

Engineering Management

Representative areas of focus leading to the Master of Science degree include crisis, emergency, and risk management; economics, finance, and cost engineering; engineering and technology management; environmental and energy management; knowledge and information management.

A minimum of 36 credits is required including:

Core courses:

EMSE 6001	The Management of Technical Organizations
EMSE 6020	Decision Making with Uncertainty
EMSE 6410	Survey of Finance and Engineering Economics
EMSE 6801	Systems Engineering I

Systems Engineering

Representative areas of focus leading to the Master of Science degree include operations research and management science; systems engineering and integration; enterprise information assurance.

A minimum of 36 credits is required including:

Core courses:

EMSE 6001	The Management of Technical Organizations
EMSE 6020	Decision Making with Uncertainty
EMSE 6410	Survey of Finance and Engineering Economics
EMSE 6801	Systems Engineering I

MECHANICAL AND AEROSPACE ENGINEERING

Mission Statement

The mission of the Department of Mechanical and Aerospace Engineering is to educate students to become professional mechanical and aerospace engineers who are confident in their understanding of science and technology, who are creative in the face of new challenges, and whose analytical skill and thirst for lifelong learning will open new career horizons; to contribute to society through the conduct of relevant research at the forefront of mechanical and aerospace engineering knowledge and to provide opportunities for students to

participate and learn through mentorship with the faculty; and to serve the nation, the community, and the university.

Educational Objectives

The mechanical engineering program provides an integrated curriculum aimed at producing graduates who develop successful careers in mechanical engineering practice or in science and technology. Graduates will be prepared to accomplish the following within a few years after graduation:

1. practice mechanical engineering in industry or government, applying knowledge and skills acquired in the program to the design of engineering systems and devices and the analysis and solution of engineering problems of complex scope; and/or
2. be successful in advanced education, research and development, or other creative efforts in engineering, science, and technology; and/or
3. apply engineering skills while pursuing careers in other professions, such as law, medicine, business, or public policy (this objective is included to reflect the program's patent law and medical preparation options and will apply to a selected group of graduates of the program);
4. conduct themselves in a responsible and ethical manner, cognizant of the social, environmental, and economic impact of engineering and technology on society;
5. embark upon a process of lifelong learning in their profession; and
6. enter into leadership roles in technological development or local, national, or global economic development.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in mechanical engineering (p. 133)
- Bachelor of Science with a major in mechanical engineering, aerospace option (p. 134)
- Bachelor of Science with a major in mechanical engineering, biomechanical option (p. 135)
- Bachelor of Science with a major in mechanical engineering, medical preparation option (p. 136)
- Bachelor of Science with a major in mechanical engineering, patent law option (p. 138)
- Bachelor of Science with a major in mechanical engineering, robotics option (p. 139)

GRADUATE

Master's program

- Master of Science in the field of mechanical and aerospace engineering (p. 140)

Doctoral program

See the School of Engineering and Applied Science for programs leading to the doctoral degree.

CERTIFICATE

- Graduate certificate in the field of computer-integrated design in mechanical and aerospace engineering (p. 140)

FACULTY

Professors C.A. Garriss, J.D.-Y. Lee, Y.-L. Shen, A.D. Cutler, S.M. Hsu, D.S. Dolling, M.W. Plesniak (*Chair*), E. Balaras, M. Keidar, K. Sarker, M. Snyder

Associate Professors Y. Leng, L. Barba

Assistant Professors P. Ben-Tzvi, P.M. Bardet, A.M. Wickenheiser, C. Liang, L. Zhang, M. Leftwich, T. Lee, S. LeBlanc

Adjunct Professor M.A. Imam

Professorial Lecturers G.C. Everstine, S.S. Dodbele, A. Rao, J.K. Soldner, J.H. Milgram, J.M. Fleming, D.R. Gerk, T.M. Krafchak, R. Krishnamurthy, M.A. Busby, K. Bulusu, T. Conway, J. Silver

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems.

REQUIREMENTS

Recommended program of study

First Semester:

UW 1020	University Writing
SEAS 1001	Engineering Orientation
MAE 1001	Introduction to Mechanical and Aerospace Engineering
MATH 1231	Single-Variable Calculus I
CHEM 1111	General Chemistry I
Humanities or social sciences elective	

Second Semester:

CSCI 1121	Introduction to C Programming
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MAE 1004	Engineering Drawing and Computer Graphics
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MATH 1232	Single-Variable Calculus II
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MATH 2184	Linear Algebra I
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PHYS 1021	University Physics I
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Third Semester:

APSC 2057	Analytical Mechanics I
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APSC 2113	Engineering Analysis I
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MATH 2233	Multivariable Calculus
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PHYS 1022	University Physics II
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Humanities or social sciences elective	
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Fourth Semester:

APSC 2058	Analytical Mechanics II
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ECE 2110	Circuit Theory
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MAE 2117	Engineering Computations
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MAE 2131	Thermodynamics
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Humanities or social sciences elective	
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Fifth Semester:

CE 2220	Introduction to the Mechanics of Solids
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MAE 3126	Fluid Mechanics I
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MAE 3166	Materials Science and Enginrg
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MAE 3190	Analysis and Synthesis of Mechanisms
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MAE 3192	Manufacturing Processes and Systems
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APSC 3115	Engineering Analysis III
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Sixth Semester:

MAE 3120	Methods of Engineering Experimentation
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MAE 3134	Linear System Dynamics
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MAE 3167	Mechanics of Materials Lab
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MAE 3187	Heat Transfer
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MAE 3191	Mechanical Design
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Humanities or social sciences elective	
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Seventh Semester:

MAE 4149	Thermal Systems Design
MAE 4182	Electromechanical Control System Design
MAE 4193	Engineering Systems Design

Technical electives

Eighth Semester:

MAE 4152 Mechanical Engineering Laboratory

Technical electives

Humanities or social sciences elective

Humanities or social sciences elective

Humanities and social sciences electives must include PHIL 2135 Ethics in Business and the Professions. Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding:

MAE 3171 Patent Law for Engineers

MAE 4172 Engineering Design and the Patent System

MAE 6298 Research

MAE 6998 & MAE 6999 MS Thesis Research and MS Thesis Research

All technical electives must be approved by the undergraduate advisor. On a case-by-case basis, technical electives may be chosen from other departments if approved by both the undergraduate advisor and the department chair.

The Department of Mechanical and Aerospace Engineering also offers the Bachelor of Science major in mechanical engineering with the options listed below. More information on the options can be found online (<http://www.mae.seas.gwu.edu/undergraduate.php>).

Aerospace Option in Mechanical Engineering

The aerospace engineering option leads to a bachelor's degree in mechanical engineering while preparing the student to work in the aerospace industry or to pursue graduate study in aerospace engineering. It provides a strong foundation in aerodynamics, airplane performance, propulsion, aerospace structures, orbital mechanics, spacecraft dynamics, and aircraft and spacecraft design.

Biomechanical Engineering Option in Mechanical Engineering

The biomechanical engineering option leads to a bachelor's degree in mechanical engineering while preparing the student to work in the biomedical industry or to pursue graduate study in biomedical engineering. It provides a strong foundation in human anatomy and physiology, biomechanics, biomaterials, and design of biomedical devices.

Medical Preparation Option in Mechanical Engineering

The medical preparation option leads to a bachelor's degree in mechanical engineering and prepares the student for application to medical school. The student is also prepared to work in research and development or to pursue graduate study in the fields of biomechanics and biotechnology.

Patent Law Option in Mechanical Engineering

The patent law option in mechanical engineering leads to a bachelor's degree in mechanical engineering while providing a strong foundation in fundamental principles of patent law and the influences of the U.S. patent system on modern engineering design. A student in this option obtains background that can lead to work as a technical specialist in a patent law firm or in the patent department of an industrial employer. The option also provides excellent preparation for pursuit of a subsequent J.D. that may focus on intellectual property law.

Robotics Option in Mechanical Engineering

The robotics engineering option leads to a bachelor's degree in mechanical engineering while preparing the student to work in the robotics industry or to pursue graduate study in robotics engineering. It provides a strong foundation in robotic mechanisms design, analysis, and integration; kinematics, dynamics, and control of robots; mechatronics design; sensing, actuation, and measurement; microprocessors for robotic systems; robotic haptics; and topics on artificial intelligence.

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, AEROSPACE OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems.

REQUIREMENTS

Recommended program of study

First Semester:

UW 1020 University Writing

SEAS 1001 Engineering Orientation

MAE 1001 Introduction to Mechanical and Aerospace Engineering

MATH 1231 Single-Variable Calculus I

CHEM 1111 General Chemistry I

Humanities or social sciences elective

Second Semester:

CSCI 1121 Introduction to C Programming

MAE 1004 Engineering Drawing and Computer Graphics

MATH 1232 Single-Variable Calculus II

MATH 2184 Linear Algebra I

PHYS 1021 University Physics I

Third Semester:

APSC 2057 Analytical Mechanics I

APSC 2113 Engineering Analysis I

MATH 2233 Multivariable Calculus

PHYS 1022 University Physics II

Humanities or social sciences elective

Fourth Semester:

APSC 2058 Analytical Mechanics II

ECE 2110 Circuit Theory

MAE 2117 Engineering Computations

MAE 2131 Thermodynamics

Humanities or social sciences elective

Fifth Semester:

CE 2220 Introduction to the Mechanics of Solids

MAE 3126 Fluid Mechanics I

MAE 3145 Orbital Mechanics and Spacecraft Dynamics

MAE 3166 Materials Science and Enginrg

MAE 3190 Analysis and Synthesis of Mechanisms

Sixth Semester:

MAE 3120 Methods of Engineering Experimentation

MAE 3134 Linear System Dynamics

MAE 3155 Aerodynamics

MAE 3162 Aerospace Structures

MAE 3167 Mechanics of Materials Lab

MAE 3187 Heat Transfer

MAE 3191 Mechanical Design

Seventh Semester:

MAE 3192 Manufacturing Processes and Systems

MAE 4157 Aerodynamics Laboratory

MAE 4163 Airplane Performance

MAE 4182 Electromechanical Control System Design

MAE 6249 Spacecraft Design

Humanities or social sciences elective

Eighth Semester:

MAE 4152 Mechanical Engineering Laboratory

MAE 6229 Propulsion

APSC 3115 Engineering Analysis III

MAE 6247 Aircraft Design I

Humanities or social sciences elective

Humanities or social sciences elective

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, BIOMECHANICAL OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex

systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems.

REQUIREMENTS

Recommended program of study

First Semester:

UW 1020	University Writing
SEAS 1001	Engineering Orientation
MAE 1001	Introduction to Mechanical and Aerospace Engineering
MATH 1231	Single-Variable Calculus I
CHEM 1111	General Chemistry I
BISC 1005	The Biology of Nutrition and Health

Second Semester:

CSCI 1121	Introduction to C Programming
MAE 1004	Engineering Drawing and Computer Graphics
MATH 1232	Single-Variable Calculus II
MATH 2184	Linear Algebra I
PHYS 1021	University Physics I

Third Semester:

APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MATH 2233	Multivariable Calculus
PHYS 1022	University Physics II
EXSC 1110	Applied Anatomy Physiology I-II

Fourth Semester:

APSC 2058	Analytical Mechanics II
MAE 2117	Engineering Computations
MAE 2131	Thermodynamics
EXSC 2113	Kinesiology
Humanities or social sciences elective	

Fifth Semester:

CE 2220	Introduction to the Mechanics of Solids
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MAE 3126	Fluid Mechanics I
MAE 3166W	Materials Science and Enginrg
MAE 3190	Analysis and Synthesis of Mechanisms
APSC 3115	Engineering Analysis III

Humanities or social sciences elective

Sixth Semester:

ECE 2110	Circuit Theory
MAE 3120	Methods of Engineering Experimentation
MAE 3128	Biomechanics I
MAE 3134	Linear System Dynamics
MAE 3167	Mechanics of Materials Lab
MAE 3191	Mechanical Design

Seventh Semester:

MAE 3192	Manufacturing Processes and Systems
MAE 4182	Electromechanical Control System Design
MAE 4193	Engineering Systems Design
MAE 6238	Biomaterials

Humanities or social sciences elective

Humanities or social sciences elective

Eighth Semester:

MAE 4129	Biomechanics II
MAE 4152W	Mechanical Engr Laboratory
MAE 3187	Heat Transfer

Humanities or social sciences elective

Humanities or social sciences elective

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, MEDICAL PREPARATION OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion,

computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems.

REQUIREMENTS

Recommended program of study

First Semester:

UW 1020 University Writing

SEAS 1001 Engineering Orientation

MAE 1001 Introduction to Mechanical and Aerospace Engineering

MATH 1231 Single-Variable Calculus I

CHEM 1111 General Chemistry I

BISC 1005 The Biology of Nutrition and Health

Second Semester:

CSCI 1121 Introduction to C Programming

MAE 1004 Engineering Drawing and Computer Graphics

MATH 1232 Single-Variable Calculus II

PHYS 1021 University Physics I

CHEM 1112 General Chemistry II

Third Semester:

APSC 2057 Analytical Mechanics I

APSC 2113 Engineering Analysis I

PHYS 1022 University Physics II

BISC 1111 Introductory Biology: Cells and Molecules

MATH 2184 Linear Algebra I

MATH 2233 Multivariable Calculus

Fourth Semester:

APSC 2058 Analytical Mechanics II

MAE 2117 Engineering Computations

MAE 2131 Thermodynamics

BISC 1112 Introductory Biology: The Biology of Organisms

ECE 2110 Circuit Theory

Fifth Semester:

CE 2220 Introduction to the Mechanics of Solids

MAE 3126 Fluid Mechanics I

MAE 3166W Materials Science and Enginrg

MAE 3190 Analysis and Synthesis of Mechanisms

APSC 3115 Engineering Analysis III

CHEM 2151 Organic Chemstry I

CHEM 2153 Organic Chemistry Laboratory I

Sixth Semester:

CHEM 2152 Organic Chemistry II

CHEM 2154 Organic Chemistry Laboratory II

MAE 3120 Methods of Engineering Experimentation

MAE 3134 Linear System Dynamics

MAE 3167 Mechanics of Materials Lab

MAE 3191 Mechanical Design

Humanities or social science elective

Seventh Semester:

MAE 3192 Manufacturing Processes and Systems

MAE 4149 Thermal Systems Design

MAE 4182 Electromechanical Control System Design

MAE 4193 Engineering Systems Design

Humanities or social sciences elective

Humanities or social sciences elective

Eighth Semester:

MAE 4152W Mechanical Engr Laboratory

MAE 3187 Heat Transfer

Technical elective

Humanities or social sciences elective

Humanities or social sciences elective

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, PATENT LAW OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems.

REQUIREMENTS

Recommended program of study

First Semester:

UW 1020	University Writing
SEAS 1001	Engineering Orientation
MAE 1001	Introduction to Mechanical and Aerospace Engineering
MATH 1231	Single-Variable Calculus I
CHEM 1111	General Chemistry I
Humanities or social sciences elective	

Second Semester:

CSCI 1121	Introduction to C Programming
MAE 1004	Engineering Drawing and Computer Graphics
MATH 1232	Single-Variable Calculus II
PHYS 1021	University Physics I
Humanities or social sciences elective	

Third Semester:

APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MATH 2184	Linear Algebra I
MATH 2233	Multivariable Calculus
PHYS 1022	University Physics II

Fourth Semester:

APSC 2058	Analytical Mechanics II
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ECE 2110	Circuit Theory
MAE 2117	Engineering Computations
MAE 2131	Thermodynamics

Humanities or social sciences elective

Fifth Semester:

CE 2220	Introduction to the Mechanics of Solids
MAE 3126	Fluid Mechanics I
MAE 3166	Materials Science and Enginrg
MAE 3171	Patent Law for Engineers
MAE 3190	Analysis and Synthesis of Mechanisms
APSC 3115	Engineering Analysis III

Sixth Semester:

MAE 3120	Methods of Engineering Experimentation
MAE 3134	Linear System Dynamics
MAE 3167	Mechanics of Materials Lab
MAE 3187	Heat Transfer
MAE 3191	Mechanical Design

Humanities or social sciences elective

Seventh Semester:

MAE 3192	Manufacturing Processes and Systems
MAE 4149	Thermal Systems Design
MAE 4182	Electromechanical Control System Design
MAE 4193	Engineering Systems Design

Technical electives

Technical electives

Eighth Semester:

MAE 4152	Mechanical Engineering Laboratory
MAE 4172	Engineering Design and the Patent System

Technical elective

Technical elective

Humanities or social science elective

Humanities or social science elective

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, ROBOTICS OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems.

REQUIREMENTS

Recommended program of study

First Semester:

UW 1020 University Writing

SEAS 1001 Engineering Orientation

MAE 1001 Introduction to Mechanical and
Aerospace Engineering

MATH 1231 Single-Variable Calculus I

CHEM 1111 General Chemistry I

Humanities or social sciences elective

Second Semester:

CSCI 1121 Introduction to C Programming

MAE 1004 Engineering Drawing and Computer
Graphics

MATH 1232 Single-Variable Calculus II

MATH 2184 Linear Algebra I

PHYS 1021 University Physics I

Third Semester:

APSC 2057 Analytical Mechanics I

APSC 2113 Engineering Analysis I

MATH 2233 Multivariable Calculus

PHYS 1022 University Physics II

Humanities or social sciences elective

Fourth Semester:

APSC 2058 Analytical Mechanics II

ECE 2110 Circuit Theory

MAE 2117 Engineering Computations

MAE 2131 Thermodynamics

MAE 3134 Linear System Dynamics

Fifth Semester:

CE 2220 Introduction to the Mechanics of Solids

MAE 3126 Fluid Mechanics I

MAE 3166 Materials Science and Enginrg

MAE 3190 Analysis and Synthesis of Mechanisms

MAE 3192 Manufacturing Processes and Systems

APSC 3115 Engineering Analysis III

Sixth Semester:

ECE 2115 Engineering Electronics

MAE 3120 Methods of Engineering
Experimentation

MAE 3167 Mechanics of Materials Lab

MAE 3184 Robotics Lab

MAE 3187 Heat Transfer

MAE 3191 Mechanical Design

MAE 3197 Robotic Systems Design and
Applications

Seventh Semester:

MAE 4182 Electromechanical Control System
Design

MAE 4183 Controls Lab

MAE 4193 Engineering Systems Design

Humanities or social sciences elective

Humanities or social sciences elective

Humanities or social sciences elective

Eighth Semester:

MAE 4152 Mechanical Engineering Laboratory

MAE 4194 Mechatronics Design

MAE 4195

CERTIFICATE IN COMPUTER-INTEGRATED DESIGN IN MECHANICAL AND AEROSPACE ENGINEERING

REQUIREMENTS

A certificate program in computer-integrated design in mechanical and aerospace engineering is offered.

MASTER OF SCIENCE IN THE FIELD OF MECHANICAL AND AEROSPACE ENGINEERING

The Department of Mechanical and Aerospace Engineering administers the field of mechanical and aerospace engineering. In addition to the entrance requirements stated above, the applicant is expected to have a background that includes an undergraduate degree in engineering, the physical sciences, or applied mathematics. The minimum program consists of 33 credits of course work or 24 credits of course work plus a master's thesis (6 credits).

REQUIREMENTS

Representative Areas of Focus Leading to the Master of Science

Aerospace Engineering

Required:

APSC 6212	Analytical Methods in Engineering II
or APSC 6213	Analytical Methods in Engineering III
MAE 6286	Numerical Solution Techniques in Mechanical and Aerospace Engineering

One of the following:

MAE 6207	Theory of Elasticity I
MAE 6221	Fluid Mechanics
MAE 6276	Mechanics of Space Flight

Students may focus their course work on aeroacoustics, aeronautics, astronautics, propulsion, or space systems.

Design of Mechanical Engineering Systems

Required:

MAE 6243	Advanced Mechanical Engineering Design
MAE 6251	Computer-Integrated Manufacturing
MAE 6286	Numerical Solution Techniques in Mechanical and Aerospace Engineering

Students may focus their course work on computer-aided design, computer-integrated design and manufacturing, mechanical engineering design, and robotics.

Fluid Mechanics, Thermal Sciences, and Energy

Required:

APSC 6213	Analytical Methods in Engineering III
MAE 6221	Fluid Mechanics
MAE 6286	Numerical Solution Techniques in Mechanical and Aerospace Engineering

Industrial Engineering

Required:

One of the following:

MATH 2233	Multivariable Calculus
APSC 3115	Engineering Analysis III
CSCI 1041	Introduction to FORTRAN Programming
CSCI 1121	Introduction to C Programming
CSCI 1131	Introduction to Programming with C

Required:

EMSE 6755	Quality Control and Acceptance Sampling
EMSE 6770	Techniques of Risk Analysis and Management
MAE 6201	Intro to Manufacturing
MAE 6252	Projects in Computer-Integrated Design and Manufacturing

Two approved three-course sequences, one in the Department of Mechanical and Aerospace Engineering, the other in a cooperating department in SEAS

Solid Mechanics and Materials Science

Required:

APSC 6213	Analytical Methods in Engineering III
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Select two of the following:

MAE 6210	Intro to Continuum Mechanics
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MAE 6238	Biomaterials
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MAE 6239	Computational Nanosciences
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Structures and Dynamics

Required:

APSC 6213	Analytical Methods in Engineering III
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MAE 6207	Theory of Elasticity I
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MAE 6286	Numerical Solution Techniques in Mechanics and Aerospace Engineering
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Robotics, Mechatronics, and Controls

Required:

MAE 6245	Robotic Systems
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MAE 6246	Electromechanical Control Systems
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Select one of the following:

MAE 6240	Kinematic Synthesis
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MAE 6242	Advanced Mechanisms
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MAE 6243	Advanced Mechanical Engineering Design
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GRADUATE SCHOOL OF EDUCATION AND HUMAN DEVELOPMENT

Dean M.J. Feuer

Senior Associate Dean C.A. Kochhar-Bryant

Associate Dean for Research and External Relations M.B. Freund

Administrative Dean and Chief of Operations P.H. Stevenson

The Graduate School of Education and Human Development prepares leaders for research, policy, and practice in the fields of teaching, counseling, administration, human and organizational learning, and education policy. The School also offers opportunities for experienced professionals to advance and enrich their education. The programs are designed to meet the broad needs of persons who seek knowledge and skills necessary to provide effective learning and teaching, research, services, and leadership in a variety of settings that cover the entire life span.

The Graduate School of Education and Human Development is accredited by the District of Columbia Office of the State Superintendent of Education (DC-OSSE) and the National Council for the Accreditation of Teacher Education/Council for the Accreditation of Educator Preparation (NCATE/CAEP). Programs that prepare students to become eligible for licensure/certification as teachers and other school personnel are state-approved by the DC-OSSE.

The Graduate School of Education and Human Development is the administrative unit for the departments of Counseling and Human Development, Curriculum and Pedagogy, Educational Leadership, Human and Organizational Learning, and Special Education and Disability Studies. In addition to programs of study leading to its degrees, the School offers certificate programs as well as credit and noncredit workshops designed to meet the unique needs of metropolitan area school systems and other clientele in industry and government.

Special curricula are individually tailored for liberal arts graduates and graduates of other professional schools who are interested in teaching or in other human services areas. The School also offers a wide range of courses for teachers who wish to pursue advanced studies and additional endorsements and for provisional teachers who wish to prepare for teaching certificates.

Laboratory and clinical facilities are provided by the Community Counseling Service Center and Office of Laboratory Experiences, which are responsible for internship placements in related educational programs in the community. Field experiences are provided in cooperation with public and private schools, social and health agencies, museums, institutions in the business community, institutions of higher education, nonprofit and professional associations, and the

federal government. Some programs and courses are also offered at off-campus locations or via distance learning.

Mission Statement

The Graduate School of Education and Human Development, strategically based in the nation's capital and serving the global community, develops informed and skilled leaders through innovative teaching and learning. Students engage in scholarly inquiry that links policy, research, and practice across the lifespan and fosters continuous self-examination and critical analysis towards excellence.

Bridging Concepts

The following bridging concepts are central to the unified conceptual framework of the School and weave through the mission, goals, and initiatives of its strategic plan.

- Research and scholarship are prerequisite to the improvement of educational practice.
- Leadership is critical in the transformation of education and human service at all levels.
- Building reflective practitioners through integration of theory and practice must be a focus of all programs.
- A community of diverse learners is prerequisite to success in the education and human service professions.

REGULATIONS

Grades

Information on grades and computing the grade-point average is found under University Regulations (p. 13).

The symbol *I* (Incomplete) indicates that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work of the course. The *I* remains on a student's record for one calendar year; if work for the course is not completed within the calendar year, the grade converts to *IF*. If the work is completed within the designated time period and a grade is assigned, the grade is indicated in the form of *I*, followed by the grade. The indication of *I* cannot be removed from the transcript. See University Regulations.

Scholarship

A grade-point average of 3.0 is required for graduation. Students who receive a grade of *C* in more than 6 credit hours are subject to suspension. Students who receive a grade of *F* must confer with the dean's office before enrollment for further course work is allowed. More detailed information for doctoral students can be found in the Doctoral Student Handbook.

Continuous Enrollment and Maintaining Residence

Students must be continuously enrolled in GSEHD unless the dean grants a leave of absence. Failure to register each semester of the academic year will result in lapse of candidacy. Subsequent readmission is subject to whatever new conditions

and regulations have been established by the School. See Continuous Enrollment Status under University Regulations.

When master's degree candidates are sitting for a comprehensive examination and are not otherwise enrolled in course work, they may prepare for and sit for the exam in continuous enrollment status. All doctoral and education specialist students and those master's students who elect to take an additional semester to prepare for the examination or who must retake the examination are required to sign up for the examination preparation course, which carries a fee equivalent to 1 credit hour of tuition. See Master's Comprehensive Examination, below.

Leave of Absence

Students who, for personal reasons, are temporarily unable to continue their program of studies may request a leave of absence for a specific period of time not to exceed one calendar year during the total period of degree candidacy. If the request is approved, the student must register for leave of absence each semester. If a student fails to register, degree candidacy is terminated. After reaching the one calendar year limit, students who are requesting to register in leave of absence status for additional semesters must seek approval for further time in this status from the appropriate appeals committee.

Class Attendance Policy

Attending regularly scheduled and scheduled make-up classes, discussions, and other course meetings is a fundamental student responsibility. Faculty may use class attendance and participation as factors in determining course grades.

PRAXIS® Teacher Assessments

All degree programs preparing students for initial teacher licensure require completion of the Educational Testing Service PRAXIS® teacher assessments as specified by the Office of the State Superintendent of Education of the District of Columbia.

MASTER'S

Teacher Certification Preparation Programs

Programs are available to prepare students for teacher licensure in elementary, secondary, and special education through the Master of Arts in Education and Human Development, Master of Education, and Education Specialist degree programs. Students who plan to prepare for licensure must apply to the appropriate degree program. These degree programs are also available to credentialed teachers seeking additional endorsements.

In accordance with the 2008 Higher Education Opportunity Act, Title II, Section 205, The George Washington University Graduate School of Education and Human Development provides required information in response to any request by potential applicants, guidance counselors, and prospective

employers. An information sheet can be viewed at gsehd.gwu.edu (<http://gsehd.gwu.edu>).

Master of Arts in Teaching

- Master of Arts in Teaching in the field of museum education (<http://bulletin.gwu.edu/education-human-development/masters-program/teaching-museum-education>)

Master of Education

- Master of Education in the field of elementary education (<http://bulletin.gwu.edu/education-human-development/masters-program/education-elementary-education>)
- Master of Education in the field of secondary education (<http://bulletin.gwu.edu/education-human-development/masters-program/education-secondary-education>)

Master of Arts in Education and Human Development

- Master of Arts in Education and Human Development individualized program (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-individualized-program>)
- Master of Arts in Education and Human Development in the field of clinical mental health counseling (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-clinical-mental-health-counseling>)
- Master of Arts in Education and Human Development in the field of counseling (<http://bulletin.gwu.edu/education-human-development/masters-program/counseling>)
- Master of Arts in Education and Human Development in the field of curriculum and instruction (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-curriculum-instruction>)
- Master of Arts in Education and Human Development in the field of early childhood special education (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-early-childhood-special-education>)
- Master of Arts in Education and Human Development in the field of educational leadership and administration (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-educational-leadership-administration>)
- Master of Arts in Education and Human Development in the field of education policy studies (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-education-policy-studies>)
- Master of Arts in Education and Human Development in the field of educational technology leadership (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-educational-technology-leadership>)
- Master of Arts in Education and Human Development in the field of experiential education and Jewish cultural arts

(<http://bulletin.gwu.edu/education-human-development/masters-program/experiential-education-jewish-cultural-arts>)

- Master of Arts in Education and Human Development in the field of higher education administration (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-higher-education-administration>)
- Master of Arts in Education and Human Development in the field of human resource development (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-human-resource-development>)
- Master of Arts in Education and Human Development in the field of international education (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-international-education>)
- Master of Arts in Education and Human Development in the field of rehabilitation counseling (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-rehabilitation-counseling>)
- Master of Arts in Education and Human Development in the field of school counseling (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-school-counseling>)
- Master of Arts in Education and Human Development in the field of secondary special education and transition services (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-secondary-special-education-transition-services>)
- Master of Arts in Education and Human Development in the field of special education (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-special-education>)
- Master of Arts in Education and Human Development in the field of special education for children with emotional and behavioral disabilities (<http://bulletin.gwu.edu/education-human-development/masters-program/education-human-development-special-education-children-emotional-behavioral-disabilities>)
- Master of Arts in Education and Human Development in the field of special education for culturally and linguistically diverse learners

EDUCATION SPECIALIST

The Degree of Education Specialist

The program of advanced study leading to the degree of Education Specialist is for students with master's degrees in education who seek further professional preparation for specific objectives. The program is available in the fields of educational leadership and administration, counseling, curriculum and instruction, higher education administration, human and organizational learning, and special education.

Admission Requirements

The following are required for entrance to an Education Specialist program: an undergraduate degree and a Master of Arts in Education and Human Development or its equivalent from a regionally accredited institution, two years of pertinent experience in an education or human development field, and a graduate scholastic average of at least 3.3 and an acceptable score on either the Graduate Record Examination or Miller Analogies Test. In the field of human and organizational learning, the Graduate Management Admission Test is acceptable as well. Two letters of recommendation, one from a professional supervisor and one from the most recent graduate faculty advisor, are required, along with a statement of professional goals. Each applicant must be interviewed and recommended by a faculty advisor in the major field.

Programs of Study and Degree Requirements

Individual programs are developed, through a plan of study worked out with a faculty advisor, to fit the candidate's skills, interests, and career goals. A minimum of 30 credit hours beyond the requirements of the degree of Master of Arts in Education and Human Development is required. At least 21 hours of this work must be taken in residence at GW. A maximum of five calendar years is allowed for completion of the program.

At least 12 of the required 30 hours must be in appropriate graduate courses in education selected from the following areas: (1) foundations and cognate study, (2) background and general principles of the field of study, and (3) an area of specialization. A graduate-level research methods course must be included in the program if it was not completed in previous graduate work.

The Comprehensive Examination

Successful completion of a six-hour written examination and/or an oral examination, at the option of the major field advisor, is required. Candidates taking the examination must be registered for at least 1 credit hour in the semester it is to be taken and must file a written application in the dean's office by the published deadline.

DOCTORAL

Doctoral programs

- Doctor of Education (<http://bulletin.gwu.edu/education-human-development/doctoral-programs/education>)
- Doctor of Philosophy in the field of counseling (<http://bulletin.gwu.edu/education-human-development/doctoral-programs/philosophy-counseling>)

CERTIFICATES

The Graduate School of Education and Human Development offers the following graduate certificate programs. Graduate certificates do not constitute eligibility for an initial license or assure admission to a subsequent degree program. Courses

taken as part of a certificate program may be applied toward advanced credentials or endorsements added to an initial license. Note that Counseling, School Counseling, and Educational Leadership and Administration are post-master's certificate programs.

- Autism Spectrum Disorders
- Brain Injury: Educational and Transition Services
- Counseling and Life Transitions
- Design and Assessment of Adult Learning
- Educational Leadership and Administration
- E-Learning
- Essentials of Human Resource Development
- Forensic Rehabilitation Counseling
- Global Leadership in Teams and Organizations
- Incorporating International Perspectives in Education
- Instructional Design
- Integrating Technology into Education
- Job Development and Placement
- Leadership Development
- Leadership in Educational Technology
- Multimedia Development
- Organizational Learning and Change
- Professional Teaching Standards
- Reading and Literacy
- Secondary Special Education and Transition Services
- Special Education for Culturally and Linguistically Diverse Learners
- Teaching English Language Learners
- Training and Educational Technology

SCHOOL OF BUSINESS

Dean D.C. Kayes (*Interim*) / L.A. Livingstone (as of August 2014)

Vice Deans J. Spencer, P.W. Wirtz

Associate Deans R. Achrol (*Interim*), I.G. Bajoux-Besnainou, G. Jabbour, V. Perry (*Interim*)

First organized as the School of Government in 1928, the School of Business (<http://www.business.gwu.edu>) has been responsible for more than 85 years for the professional development of individuals assuming leadership roles in society. The School has eight departments—Accountancy, Decision Sciences, Finance, Information Systems and Technology Management, International Business, Management, Marketing, and Strategic Management and Public Policy. The use of a multidisciplinary approach in educational programming helps prepare both the generalist and specialist for professional careers in today's complex, organizational society.

The School of Business is a member of AACSB International—The Association to Advance Collegiate Schools of Business (<http://www.aacsb.edu>), and the undergraduate and graduate programs in business administration and accounting are accredited by the Association.

Mission Statement

The mission of The George Washington University School of Business is to have a lasting intellectual impact by offering quality education through innovative programs that provide theoretical frameworks and real-world learning experiences; engaging in rigorous scholarship that advances knowledge in the management of organizations in the global environment; and contributing as a local, national, and global citizen. We do this within a community built upon respect, integrity, and active engagement.

Vision

The George Washington University School of Business will set itself apart as a thought leader at the intersection of the private, public, and not-for-profit sectors. We will be recognized for advancing knowledge on the role of organizations in the global arena. Our graduates will possess the multidisciplinary knowledge, critical-thinking skills, and ethical standards to make a positive impact on economies and societies.

Strategic Goals

The School of Business' strategic goals address three areas that translate the School's mission into specific strategies, programs, and initiatives. We aspire to enhance the School's reputation and prestige among internal and external stakeholders through recognition, accreditation, and rankings.

Educational Goal

We offer a distinctive educational experience to prepare global business leaders through a portfolio of niche programs that

emphasize academic rigor, learning outcomes, and teaching excellence in both delivery and content.

Intellectual Contribution Goal

We engage in scholarly research that contributes to the creation of knowledge for improving the management and performance of organizations.

Service and Outreach Goal

We engage as citizen-leaders in the communities of which we are a part.

REGULATIONS

- Undergraduate Programs (p. 146)
- Graduate Programs (p. 148)

Undergraduate Programs

The School offers programs leading to the degrees of Bachelor of Accountancy, Bachelor of Business Administration, and Bachelor of Science. The programs include foundation knowledge for business in accounting, economics, mathematics, and statistics. Curricula are designed to provide perspectives on ethical and global issues, the influence of political, social, legal and regulatory, environmental, and technological issues, and the impact of demographic diversity on organizations. A Bachelor of Business Administration student selects a field of concentration from among business economics and public policy; finance; information systems; international business; marketing; sport, event, and hospitality management; or, with faculty approval, may structure an individualized field of concentration reflecting a specific interest in management. Additionally, a minor in non-business field is required. The Bachelor of Science integrates the University's emphasis on interdisciplinary study at the undergraduate level by requiring one major in the School of Business and a second major in a non-business field.

Advising

Students entering the School of Business are assigned a professional academic advisor who advises them through graduation. The GWSB Advising Center (<http://business.gwu.edu/ugrad/advising-center>) staff empower students to take ownership of, and responsibility for, their educational experiences. Students partner with advisors to successfully navigate their academic careers through conversations that range from understanding University requirements, to exploring degree possibilities, to finding appropriate campus resources. Specialized advising is provided for the following areas: academic success, individualized fields, external transfers, five-year dual degree programs, and study abroad. Students should meet with their GWSB advisor each semester in order to insure that they remain on track for fulfilling all degree requirements.

Residence

Of the 120 credit hours required for graduation, at least 60 credits must be completed at GW and at least 30 credits,

including 27 credits in required business or accountancy courses, must be completed while registered in the School of Business. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Unless special permission is granted by the director of the Advising Center (<http://business.gwu.edu/ugrad/advising-center>) to pursue work elsewhere, the work of the final semester (15 credits) must be completed in the School of Business. Students who have successfully completed 60 credit hours at GW may not take courses at a community college. Excluding study abroad, students matriculated at GW may have a maximum of 9 credit hours transferred into the B.B.A., B.Accy., or B.S. or program.

Assignment of Credit for Transfer Students

Certain courses taken at a two-year college (one per area up to a maximum of three courses) comparable to this School's lower-level undergraduate courses may be accepted for credit only after BADM 4801 Strategy Formulation and Implementation is successfully completed with a grade of C or better in the senior year.

An international student who is required to take the English for Academic Purposes writing course (EAP 1015 American Multicultural Perspectives in Washington, D.C.) will be required to complete the course successfully, and assignment of credit for any previously completed courses at another institution will be held pending completion of this requirement.

To be considered for transfer to the School of Business from another division of the University, students must have a cumulative grade-point average of 2.8 or above. Performance in quantitative courses will also be reviewed.

Scholarship Requirements

A student must have the following to graduate:

1. a minimum of 120 credit hours;
2. an overall grade-point average of at least 2.0; and
3. a grade-point average of at least 2.0 in all required upper-division B.B.A., B.Accy., or B.S. courses and concentration-related courses (the major field grade-point average).

All courses taken at GW are included in the overall grade-point average calculation. Elective courses in or out of the School of Business cannot be used as substitutes for required courses in the calculation of the major field grade-point average.

Probation

A student whose grade-point average (either overall or in the major field) falls below 2.0 after completing a minimum of 12 credit hours will be placed on probation. Probation by overall grade-point average normally extends over the period in which the student attempts a maximum of 12 credit hours, which may include remedial studies as prescribed. Performance will be reviewed at the end of the next semester, and the student may be suspended at that time. Incompletes and course withdrawals are not allowed during the probation period.

Probation by major field normally extends over the period in which the student attempts 6 credit hours in major field course work. Students on probation are required to meet regularly with an assigned advisor during the probationary period.

Suspension

A student whose grade-point average (either overall or in the major field) is 1.5 or below in any semester or remains below 2.0 at the end of the probationary period will be suspended. Any outstanding Incomplete at the time of suspension must be completed or will become an *IF*. A student suspended for poor scholarship may apply for readmission after the end of the fall or spring semester following the term of suspension. To be considered for readmission, the student must submit acceptable evidence of renewed potential ability to successfully complete college-level work during the suspension period. No advanced standing will be assigned for academic work completed while the student is suspended, but the student may petition the director of the Advising Center (<http://business.gwu.edu/ugrad/advising-center>) for consideration of advanced standing after completing a minimum of 12 credit hours of course work here and achieving a cumulative and major field GPA of at least 2.0.

A student readmitted after suspension is on probation and must maintain a current grade-point average determined by the director of the Advising Center (<http://business.gwu.edu/ugrad/advising-center>) until the cumulative and major field grade-point averages are at least 2.0. In no case will the overall probationary period after readmission exceed 24 credit hours or the major field probationary period exceed 12 credit hours. A student suspended twice for poor scholarship will not be readmitted.

Mid-Semester Warning

If a professor files an evaluation showing that a student performs unsatisfactory academic work (C– or below), the director of the Advising Center will inform the student of his or her status. This notice constitutes an official direction to consult with the professor and advisor immediately.

Semester Warning

Any student whose overall or major grade-point average falls between 2.0 and 2.2 will be placed on warning. Though the student's courses will not be restricted, progress during the semester will be monitored. It is the student's responsibility to meet with the assigned advisor every two weeks during the semester.

Undergraduate Policies

Academic Work Load—Full-time students in good standing (2.0 overall grade-point average or higher) may register for a maximum of 17 credit hours each semester and 6 credits each summer session. A student employed more than 20 hours a week, who is in good standing, may not take more than 9 credits each semester and 3 credits each summer session. A full-time student on probation may take no more than 12

credit hours of course work; it is strongly recommended that a student on probation not be employed. Full-time students whose overall grade-point average is 3.0 or higher may take up to 18 credits each semester, with the understanding that additional tuition applies in this situation. A student employed more than 20 hours a week, whose grade-point average is 3.0 or higher, may take up to 12 credits.

Pass/No Pass Option—A junior or senior student who has a cumulative grade-point average of 2.5 or better may, with approval of the instructor, the advisor, and the director of the Advising Center, take one upper-level non-business or unrestricted elective a semester and receive a grade of *P*, Pass, or *NP*, No Pass, which will be recorded on the student's transcript but will not be reflected in the grade-point average. No student will be allowed to take more than four pass/no pass courses, with a limit of one per semester. Under no circumstances may a student change from pass/no pass status to graded status, or vice versa, after the last date to withdraw from a course. Required courses (including WID courses) may not be taken on the pass/no pass basis. A transfer student may not choose this option until the second semester of enrollment in the University.

Incompletes – Conditions under which the symbol *I* (Incomplete) may be assigned are described under University Regulations. In the School of Business, the conditions for granting a notation of *I* should be documented by a written contract between the faculty member and the student; this Incomplete Contract can be found on the GWSB Advising Center website (<http://business.gwu.edu/ugrad/advising-center>). These contracts are kept in the student's file in the Advising Center.

Dean's Honor List—The names of students who achieve a grade-point average of 3.75 or higher are placed on the Dean's Honor List for that semester. Appearance on the list is limited to (1) full-time students registered for a minimum of 12 credit hours (provided that the 12 credits are taken for a grade) and (2) part-time students registered for a minimum of 12 credit hours over a period of two consecutive semesters, which may include a summer term.

Independent Research Plan—A junior or senior of demonstrated capacity, with a special interest in the subject matter of a course, may be permitted to undertake study under the personal direction of a regular, full-time member of the faculty, in accordance with the rules of the appropriate department. Credit under this plan is limited to the specific credit hours normally allowed when a course is taken on a class basis. A petition outlining the student's specific study plan must be submitted to the director of the Advising Center (<http://business.gwu.edu/ugrad/advising-center>) prior to beginning any independent study. Generally, a maximum of two independent studies in two separate semesters is permitted.

Minors—A minor in business administration is available in the School of Business to students in other schools of GW. School of Business students may pursue a minor in other GW schools.

Students from Other Schools Within the University—Degree candidates from other schools of the University cannot register for more than 21 credits in courses from the B.B.A. program. Typically, a maximum of 6 credits is permitted in courses from the B.Accy. program, unless an advisor recommends an additional 3 credits.

Graduate Programs

Entrance Requirements

To be considered for admission, applicants must present a bachelor's degree from a regionally accredited college or university. Admission to master's programs is highly competitive. Previous academic history, performance on the applicable entrance examination, letters of recommendation, motivation and aptitude to do graduate-level work, and professional experience are all taken into consideration.

Applicants for admission to programs leading to the Master of Business Administration, Master of Accountancy, Master of Science in Finance, and Master of Tourism Administration must submit scores on the Graduate Management Admission Test or the Graduate Record Examination. Test scores that are more than five years old are not accepted for admissions review.

English Language Requirements for International Students

Applicants who are not citizens of countries where English is the official language or who do not hold a degree from a regionally accredited U.S. institution of higher learning are required to submit scores from the Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the Pearson Test of English–Academic (PTE). Specified possible exemptions from this policy can be found at graduate.admissions.gwu.edu/english-language-requirements (<http://graduate.admissions.gwu.edu/english-language-requirements>).

The Master of Science in Finance program requires a minimum score of 550 paper-based or 80 Internet-based on the TOEFL, or an overall band score of 6.5 on the IELTS with no individual band score below 5.5. All other School of Business graduate degree programs require a minimum TOEFL score of 600 paper-based or 100 Internet-based, or an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE. In some instances, an interview will be required of applicants.

Applicants for graduate teaching assistantships must have a minimum score of 600 paper-based or 100 Internet-based on

the TOEFL, an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE.

Students with the following English language test scores are exempt from taking English for Academic Purposes (EAP) courses: TOEFL, 600 paper-based or 100 Internet-based; IELTS, overall band score of 7.0 with no individual band score below 6.0; PTE, 68. Students with test scores below these minimums must register for an EAP course during their first semester. Students assigned EAP courses should anticipate additional tuition expenses as well as a possible extended period of time required to complete their degree program. EAP courses do not count toward degree requirements.

Transfer Within the School

Currently enrolled students wishing to transfer from one graduate degree program to another within the School must complete a new application for admission through the appropriate degree program office. Applicants for transfer are subject to requirements in effect at the time of transfer. In addition, students must submit all required credentials no later than the established completion dates for the term for which the transfer is requested. Students must be in good academic standing (3.0 grade-point average) for transfer consideration.

Readmission

A student who withdraws, is suspended, or is otherwise absent without authorization from the University for one semester or more must make formal application for readmission to the director of the student's degree program and resubmit all supporting credentials including transcripts from previous schools attended, including George Washington University, and entrance examination scores. If readmitted, the student is subject to the rules and regulations in force at the time of return. If the student has attended one or more regionally accredited colleges or universities during absence from the University, complete official transcripts must accompany the application for readmission.

The application fee is waived for a student applying for readmission who was registered as a degree candidate at the time of last registration at the University and has not since registered at another college or university.

General Requirements

All students must complete the prescribed minimum number of credit hours of graduate course work. A maximum of 6 credit hours of graduate course work may be approved for transfer to the School of Business from enrollment at GW in nondegree status or from another degree-granting school of this University, or another regionally accredited college or university under the following conditions: The course work must be approved as part of the student's program of studies; it must not have been applied to the completion of requirements for another degree, it must be at the graduate level, it must have been taken within the two years prior to acceptance into the program, and the student must have

received a grade of *B* or better. A transcript and description of the course work must be on file before the petition can be considered. Should advanced standing be granted, the credit will count but not the grade.

Students who enroll in course work at a School of Business exchange partner institution while enrolled in a GWSB degree program may transfer a maximum of 12 credits from the partner institution after participation in an official exchange program. Such credits do not count toward the 6-credit maximum transfer restriction. Exchange partners must have an established Memorandum of Understanding with the School of Business. Course work must be approved as part of the student's program of study; it must be at the graduate level and must meet the GWSB program's grade requirements for transfer credit. For additional information, contact the Office for Global and Experiential Education.

Master's degrees are awarded by vote of the Faculty on completion of the required course work and completion of an acceptable thesis (if one is elected) in the chosen degree or field of concentration.

Although work counted toward a bachelor's degree may not be counted toward a master's degree, a student who has completed the equivalent of a Master of Accountancy or Master of Business Administration core prerequisite course with a grade of *B* or better as part of the bachelor's degree program may request a waiver of that course at the master's level. A grade of *B* or better is required to waive remaining core prerequisite courses on the basis of equivalent graduate-level courses completed at GW or another AACSB-accredited college or university prior to admission to the program. All courses presented for waiver consideration must have been taken within five years prior to the first semester of enrollment into the program. Students should contact their degree program director for specific waiver criteria and deadlines for requesting waivers.

A full-time student may register for a minimum of 9 to a maximum of 15 credit hours each semester and 6 credit hours each summer session (the maximum is 18 for full-time M.B.A. students). Excluding those enrolled in the Professional Master of Business Administration, a graduate student who is employed more than 20 hours a week may not take more than 9 credit hours each semester and 3 credit hours each summer session. All work for a master's degree must be completed in five years.

Students who expect to continue studies for a doctoral degree after receiving the master's degree should ask for assistance in planning their programs of study.

No credit is granted for work done in absentia or without formal instruction, except for supervised field experience, independent study, and the thesis, which may be completed in absentia with the permission of the department, designated faculty advisor, or committee concerned.

Independent Study Plan

A graduate student of demonstrated capacity, with a special interest in the subject matter of a course, may be permitted to undertake study under the personal direction of an instructor, in accordance with the rules of the appropriate department. Credit under this plan is limited to the specific credit hours normally allowed when a course is taken on a class basis. A petition outlining the student's specific study plan must be submitted to the student's degree program director prior to beginning any independent study. The student may petition to complete a maximum of two independent studies in two separate semesters.

Students from Other Schools Within the University

Degree candidates from other schools of the University cannot register for more than 12 hours of credit from the Master of Accountancy, Master of Science in Finance, or Master of Business Administration degree programs.

Scholarship Requirements

The University's general scholarship requirements, including information on grades and computing the grade-point average, appear under University Regulations in this Bulletin. A minimum grade-point average of 3.0 must be maintained and is required for award of a graduate degree. All graduate courses and undergraduate courses taken for graduate credit after matriculation as a degree candidate (except those audited or taken for the grade of CR) will be used in the calculation of the grade-point average.

Probation

A student whose grade-point average falls below 3.0 at any point after completing 9 credit hours will be placed on probation. This probation extends through the period in which the student next attempts up to 12 credit hours of work, including prescribed courses. A student's program may be restricted by the program director if deemed necessary. During this period, the student's performance will be monitored to determine suitability for continued study. A student who fails to raise the cumulative grade-point average to 3.0 or better during the period of probation will be suspended. Incomplete grades are not allowed during the probation period and are grounds for automatic suspension. A student who is subject to probation for a second time at any point during the program is automatically suspended.

Grade of F

A master's degree candidate who receives a grade of *F* is required to present cause, for consideration by the director of the student's degree program, as to why continued study should be permitted. Once a grade of *F* is earned in a core, required, or elective course, it remains a part of the student's permanent record and is calculated into the grade-point average. A master's degree candidate given the grade of *F* in a core or other required course, and permitted to continue in

graduate studies, must repeat the course and achieve at least the grade of *B*. If the grade earned is below *B*, the student will be denied further registration as a degree candidate.

Suspension

A graduate student who does not meet the conditions of probation (see above) will be suspended. A student who is suspended or withdraws under these conditions may apply for readmission after the lapse of one semester. An outstanding Incomplete grade at the time of suspension will become an *F*. To be readmitted the student must submit evidence that indicates academic success if readmitted. A student so readmitted will continue on academic probation and must achieve a minimum grade-point average of 3.5 in the next 12 credit hours of graduate study. Should the student fail to achieve this minimum grade-point average, a second suspension will result and subsequent readmission will be denied.

Incompletes

Conditions under which the symbol *I* (Incomplete) may be assigned and changed are described under University Regulations. The symbol *I* must be changed by a date agreed on by the instructor and the student but usually no later than the last day of the examination period within one calendar year for the fall, spring or summer semester in which the symbol *I* is assigned. An Incomplete that is not changed within this period automatically becomes an *IF*, at which time a student is placed on F-Probation (see Grade of *F* above). In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the director of the student's degree program for additional time in which to complete the work of the course. Such petitions should be submitted within the same period. The symbol of *I* cannot be changed by reregistering for the course here or by taking its equivalent elsewhere. Upon submission of the assigned grade, the *I* is removed from the transcript.

Thesis

Students contemplating doctoral study are strongly urged to include the thesis as an elective in their master's program. The thesis subject should be selected as early as possible to permit effective integration with the course work.

The subject must be approved by the professor in charge of the student's field. The thesis in its final form must have the approval of the professor in charge. All theses must be submitted electronically and meet the formatting and other requirements set forth on line at GW's Electronic Theses and Dissertations Submission website (<http://library.gwu.edu/etds>)

Payment of tuition for the thesis entitles the candidate, during the semesters in which registered for thesis seminar and/or thesis research, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, additional time is granted. The student must, however, be enrolled continuously in the program. If the

preparation of the thesis extends more than three semesters beyond the date registered for thesis research, the student must register for the entire required hours of thesis again and pay additional tuition.

UNDERGRADUATE

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GRADUATE

Master’s programs

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Doctoral program

- Doctor of Philosophy in the field of business administration (p. 160)

CERTIFICATES

- Post-Master’s Graduate Certificate
- Walkable Urban Development

The School of Business Post-Master’s Graduate Certificate is designed to provide School of Business master’s degree alumni an opportunity to build upon their previous graduate study to keep pace with today’s business climate. Participants may undertake a 12-credit program of study in an existing School of Business field or from a series of specially designed program

offerings. Further information is available from the Office of the Dean.

A 12-credit graduate certificate in responsible management is available to current M.B.A. students.

A 16.5-credit graduate certificate in walkable urban development is available to current School of Business students and to non-degree students.

UNDERGRADUATE PROGRAMS

BACHELOR OF ACCOUNTANCY

REQUIREMENTS

The Bachelor of Accountancy curriculum has been revised for all B.Accy students entering the University in fall 2014. Students who entered prior to fall 2014 will continue with the curriculum for the academic year in which they entered. This degree requires a minimum of 120 semester credits and completion of all required courses.

Students who intend to take the C.P.A. examination should be aware that the course work required for admission to the examination varies from state to state. Students are advised to consult the Board of Accountancy for the state in which they plan to take the examination and choose courses that meet that state’s requirements.

Curriculum for B.Accy students entering fall 2014

General education and pre-business courses	
UW 1020	University Writing
BADM 1004	The Age of Globalization
ECON 1011	Principles of Economics I
ECON 1012	Principles of Economics II
One humanities course (see list of approved options on GWSB advising center website)	
Two science courses (see list of approved options on GWSB advising center website)	
STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1111	Business and Economic Statistics I
Choose a sequence of two math courses from the following:	
MATH 1051 & MATH 1252	Finite Mathematics for the Social and Management Sciences and Calculus for the Social and Management Sciences

MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II
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Business core courses

BADM 1001	First Year Development Course I
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BADM 1002	First Year Development Course II
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ACCY 2001	Intro Financial Accounting
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ACCY 2002	Introductory Managerial Accounting
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BADM 2001W	Markets and Politics
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BADM 2301	Management Information Systems Technology
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or BADM 2301W	Mgt Information Systems Tech
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BADM 3001	Career Management Strategy
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BADM 3103	
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BADM 3401	Basic Marketing Management
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or BADM 3401W	Basic Marketing Management
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BADM 3501	Financial Management and Markets
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BADM 4801	Strategy Formulation and Implementation
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Accountancy major courses

ACCY 3101	Intermediate Accounting I
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ACCY 3102	Intermediate Accounting 2
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ACCY 3401	Federal Income Tax:Individuals
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ACCY 3403	Advanced Tax
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ACCY 3601	Business Law: Contracts, Torts, and Property
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ACCY 4107	Advanced Accounting
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ACCY 4301	Auditing
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ACCY 4601	Business Law: Enterprise Organization
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ACCY 4501	Accounting Systems
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ACCY 4801	Financial Accounting Capstone
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International focus elective (see list of approved options on GWSB advising center website)	
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Elective requirements *

6 credits of non-business elective (courses outside of GWSB numbered 1000-4999)	
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3 credits of unrestricted electives (any GW course numbered 1000-4999)	
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9 credits of non-business electives (courses outside of GWSB numbered 2000-4999)	
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12 credits of unrestricted electives (any GW course numbered 2000-4999)	
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- * Electives may not include LSPA (lifestyle, sport, and physical activity) courses and may include a maximum of one HLWL (health and wellness) course.

BACHELOR OF BUSINESS ADMINISTRATION

The Bachelor of Business Administration curriculum has been revised for all B.B.A. students entering GW in fall 2014. This degree requires a minor outside of the School of Business. Students who entered prior to fall 2014 will continue with the curriculum for the academic year in which they entered. The curriculum for the B.B.A. includes general education and pre-business courses, business core courses, business concentration courses, a minor outside of the School of Business, and electives. This degree requires a minimum of 120 semester credits and completion of all required courses.

REQUIREMENTS

The Bachelor of Business Administration curriculum has been revised for all B.B.A. students entering GW in fall 2014. This degree requires a minor outside of the School of Business. Students who entered prior to fall 2014 will continue with the curriculum for the academic year in which they entered.

Curriculum for B.B.A. students entering fall 2014

General education and pre-business courses

UW 1020	University Writing
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BADM 1004	The Age of Globalization
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ECON 1011 & ECON 1012	Principles of Economics I and Principles of Economics II
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One humanities course (see list of approved options on GWSB Advising Center website)	
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Two science courses (see list of approved options on GWSB Advising Center website)	
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STAT 1051	Introduction to Business and Economic Statistics
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or STAT 1053	Introduction to Statistics in Social Science
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or STAT 1111	Business and Economic Statistics I
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STAT 2112	Business and Economic Statistics II
or STAT 2118	Regression Analysis

A sequence of two math courses from the following options:

MATH 1051 & MATH 1252	Finite Mathematics for the Social and Management Sciences and Calculus for the Social and Management Sciences
or MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II

Business core courses

BADM 1001	First Year Development Course I
BADM 1002	First Year Development Course II
ACCY 2001	Intro Financial Accounting
ACCY 2002	Introductory Managerial Accounting
BADM 2001W	Markets and Politics
BADM 2301	Management Information Systems Technology
or BADM 2301W	Mgt Information Systems Tech
BADM 3001	Career Management Strategy
BADM 3103	
BADM 3401	Basic Marketing Management
or BADM 3401W	Basic Marketing Management
BADM 3501	Financial Management and Markets
BADM 3601	Operations Management
BADM 4101	Business Law and Ethics
BADM 4801	Strategy Formulation and Implementation

Business concentration courses

A business concentration is required for this degree. A Bachelor of Business Administration student will select a field of concentration from among business economics and public policy; finance; information systems; international business; marketing; sport, event, and hospitality management; or, with faculty approval, may structure an individualized field of concentration reflecting a specific interest in management. The concentration consists of five field courses plus an international focus field course designated by the department. The concentration must be selected no later than the second semester of the sophomore year; the student should contact the advising center to declare a concentration. Students may

declare two concentrations, but they should note that this may increase the number of credit hours required to complete the B.B.A. In all cases, students must consult the academic advisor for an appropriate international focus field course. Concentration requirements will be available at the School of Business website (<http://business.gwu.edu/ugrad>) or at the Undergraduate Advising Center (<http://business.gwu.edu/ugrad/advising-center>).

A BBA student with a minimum GPA of 3.2 and a specific interest in an area of management not reflected by the standard B.B.A. concentrations may design and seek approval for an individualized concentration drawing on courses across the University. Such a concentration consists of five field courses and one international focus field course selected with the guidance of faculty with expertise in the area of interest. Past examples of approved individualized concentrations include small business management, entrepreneurship, human resource management, real estate development, supply chain management, health care administration, and performing arts management. All individualized concentration proposals must be submitted by the end of the junior year and must be approved in advance by the individualized concentration faculty review committee. Interested students should discuss their idea with the GWSB advisor who oversees individualized fields in the GWSB Advising Center (<http://business.gwu.edu/ugrad/advising-center>).

Minor Courses

A minor outside of the School of Business is required for this degree. Courses will vary according to minor and may require 15-18 semester credits. Please reference the Bulletin and consult your academic advisor for assistance and additional information.

Elective Courses

Elective courses may be numbered 1000-4999; at least six credits must be upper-level (numbered 2000-4999). Electives may not include LSPA (Lifestyle, Sport, and Physical Activity) courses and may include a maximum of one HLWL (Health and Wellness) course. In general, students will complete 18 semester credits of electives, or the minimum necessary to reach 120 semester credits for the degree.

BACHELOR OF SCIENCE WITH A MAJOR IN FINANCE

The Bachelor of Science degree is offered by the School of Business both to its own students and to those enrolled in other GW schools. Because SB students enrolled in the program are required to take a second major in another GW school, while those from other GW schools take the program as a second major, the Bachelor of Science Program thus integrates the University's emphasis on interdisciplinary study. The degree is currently offered with a major in finance. Students must apply and be admitted to this competitive program. Applications and detailed instructions are available at the School of Business

website (<http://business.gwu.edu/ugrad>). This degree requires a minimum of 120 semester credits and completion of all required courses.

REQUIREMENTS

General education courses for School of Business students

School of Business students pursuing a second major in Columbian College of Arts and Sciences or the School of Engineering and Applied Science are required to complete the CCAS general education curriculum; School of Business students pursuing a second major in the Elliott School of International Affairs are required to fulfill the Elliott School's general education requirements. Reference the CCAS general education curriculum requirements, and consult an academic advisor for details.

Prerequisite courses

BADM 1001 & BADM 1002	First Year Development Course I and First Year Development Course II (for SB students)
BADM 1003	Transfer Student Development (for students from other schools)
BADM 1004	The Age of Globalization
BADM 2001W	Markets and Politics
MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II
ECON 1011 & ECON 1012	Principles of Economics I and Principles of Economics II
STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1111	Business and Economic Statistics I
STAT 2118	Regression Analysis

Courses required for the finance major

ACCY 2001	Intro Financial Accounting
ACCY 3106	Financial Statement Analysis
BADM 3001	Career Management Strategy
BADM 3501	Financial Management and Markets
BADM 4101	Business Law and Ethics
FINA 3001	Intermediate Finance

FINA 3101	Investment and Portfolio Management
FINA 4001	Advanced Financial Management
or FINA 4001W	Advanced Financial Management
Four of the following:	
ACCY 2002	Introductory Managerial Accounting
FINA 3201W	Exploring Finance w/Simulation
FINA 3301	Money and Capital Markets
FINA 4101	Applied Financial Securities Analysis
FINA 4201	Real Estate Investment
FINA 4900	Special Topics (Financial Derivatives)
FINA 4900	Special Topics (History of Finance)
One of the following:	
ECON 2180	Survey of International Economics
ECON 2181	International Trade Theory and Policy
ECON 2182	International Macroeconomic Theory and Policy
IBUS 3001	Introduction to International Business
IBUS 3301	International Business Finance
IBUS 4302	International Banking
IBUS 4303	International Monetary and Financial Issues

Credits as listed above: 62-63 semester credits (does not include general education requirements or credits for the second major). A minimum of 120 credits are required for this degree.

Courses for the second major

A second major outside of the School of Business is required for this degree. Courses will vary according to major. Reference the Bulletin and consult your academic advisor for additional information

DUAL DEGREE PROGRAMS

- Five-Year Dual Bachelor of Accountancy and Master of Accountancy
- Five-Year Dual Bachelor of Business Administration and Master of Accountancy
- Five-Year Dual Bachelor of Business Administration and Master of Science in Information Systems Technology

- Five-Year Dual Bachelor of Business Administration and Master of Tourism Administration

Five-Year Dual B.Accy./M.Accy. and B.B.A./M.Accy.

Students in the five-year dual degree program leading to the Master of Accountancy (<http://bulletin.gwu.edu/business/graduate-programs/accountancy-ma>) first pursue either the Bachelor of Accountancy or Bachelor of Business Administration. They may apply for admission to the M.Accy. after completion of 75 credits toward the undergraduate degree and successful completion of the Graduate Management Admission Test. Students typically earn the B.Accy. or B.B.A. after four years and the M.Accy. at the end of the fifth year. The dual degree program requires 150 credit hours, with 30 graduate-level credits.

Five-Year Dual B.B.A./M.S.I.S.T.

Students in the five-year dual degree program leading to the Master of Science in Information Systems Technology first pursue the Bachelor of Business Administration with a concentration in Information Systems. Students pursue the regular B.B.A. curriculum in their first three years of study and are enrolled in courses at both the undergraduate and graduate levels during the final two years. Students can apply for admission to the program when they apply for admission to the University (they must meet specified GPA and other requirements to remain in the program), or they may apply after earning 75 credits. Students typically earn the B.B.A. after four years and the M.S.I.S.T. at the end of the fifth year. Students who choose to discontinue the program at the end of four years may be required to take additional courses to complete requirements for the B.B.A.

Five-Year Dual B.B.A./M.T.A.

Students in the five-year dual degree program leading to the Master of Tourism Administration first pursue the Bachelor of Business Administration with a concentration in Sport, Event, and Hospitality Management. Students pursue the regular B.B.A. curriculum in their first three years of study and are enrolled in courses at both the undergraduate and graduate levels during the final two years. Students can apply for admission to the program when they apply for admission to the University (they must meet specified GPA and other requirements to remain in the program), or they may apply after earning 75 credits. Students typically earn the B.B.A. after four years and the M.T.A. at the end of the fifth year. Students who choose to discontinue the program at the end of four years may be required to take additional courses to complete requirements for the B.B.A.

MINOR IN BUSINESS ADMINISTRATION

The School of Business offers a minor in business administration. Requirements for the business administration

minor can be found on the GWSB Advising Center website (<http://business.gwu.edu/ugrad/advising-center>).

School of Business students may pursue a minor in other GW schools after receiving approval from the appropriate faculty member in the minor department or program.

GRADUATE PROGRAMS

Master's programs

- Global Master of Business Administration (p. 156)
- Master of Accountancy (p. 155)
- Master of Business Administration (p. 156)
- Master of Science in Business Analytics (p. 157)
- Master of Science in Finance (p. 158)
- Master of Science in Information Systems Technology (p. 158)
- Master of Science in Project Management (p. 159)
- Professional Master of Business Administration (p. 156)
- Master of Tourism Administration (p. 159)
- Special programs (p. 160)
 - Executive Master of Science in Information Systems Technology
 - Healthcare Master of Business Administration
 - Master of Business Administration and Master of Arts
 - Master of Business Administration and Juris Doctor
 - Master of Science in Government Contracts
 - World Executive Master of Business Administration

Doctoral program

- Doctor of Philosophy in the field of business administration (p. 160)

MASTER OF ACCOUNTANCY

REQUIREMENTS

The Master of Accountancy program is designed to be flexible, allowing students to prepare for the fields of financial management, public accounting, and taxation. The program may be pursued on a full-time or part-time basis.

The program requires 30 to 36 credits, depending upon whether the student holds a B.Accy. or has similar academic preparation.

The 30-credit program for students who hold a B.Accy requires 13.5 credits that may be waived on the basis of approved prior preparation with substitution of other course work in accountancy. The required but waivable courses are:

ACCY 6104	Intermediate Accounting I
ACCY 6105	Intermediate Accounting II
ACCY 6301	Contemporary Auditing Theory

MBAD 6235	Finance
MBAD 6242	Microeconomics for the World Economy
A statistics workshop	

The 30-credit program for students who hold a BBA degree requires a total of 21 credits in accounting.

The 36-credit program requires 19.5 credits that may be waived with substitution of approved graduate course work in the same field of study and 1.5 credits that may be waived without substitution (thereby bringing the minimum credit requirement to 34.5): required but waivable courses are:

ACCY 6101	Financial Accounting
ACCY 6201	Managerial Accounting I
ACCY 6202	Managerial Accounting II
ACCY 6104	Intermediate Accounting I
ACCY 6105	Intermediate Accounting II
ACCY 6301	Contemporary Auditing Theory
MBAD 6235	Finance
MBAD 6242	Microeconomics for the World Economy
A statistics course	

Elective requirements are 19.5 credits of graduate courses in the School of Business, which must include 7.5 credits in accountancy.

Students who intend to take the C.P.A. examination should be aware that the course work required for admission to the examination varies from state to state. Students are advised to consult the Board of Accountancy for the state in which they plan to take the examination and choose electives that meet that state's requirements.

MASTER OF BUSINESS ADMINISTRATION

Every Master of Business Administration program at the George Washington University School of Business is global in scope and emphasizes the quantitative and qualitative aspects of business practice. All of our programs offer a deliberate focus on corporate responsibility, ethics, sustainability, and global leadership in addition to traditional business competencies.

Students may apply to the Global MBA, Professional MBA, Online MBA, Online Healthcare MBA or World Executive MBA, depending on academic and professional background.

International students who must maintain full-time status for student visa requirements may apply to the Global MBA; international students looking to continue working in their home country while pursuing their education may apply to the Online MBA.

See <http://healthcaremba.gwu.edu/> for more information on the Online Healthcare MBA; See www.business.gwu.edu/emba (<http://www.business.gwu.edu/emba>) for the World Executive M.B.A. program, which is briefly described under Special Programs at the end of this section.

GLOBAL MASTER OF BUSINESS ADMINISTRATION

The Global M.B.A. is a full-time, 55.5 credit program designed for individuals with a minimum of two years of work experience who are to pursue a comprehensive 21 month program and often are interested in making a career transition.

The first semester concentrates on core business skills with coursework that includes strategy, organizations and human capital, accounting, finance and marketing. The second semester incorporates the core values of the School of Business -- ethics and globalization -- through coursework in global perspectives and business ethics and public policy, culminating in an international consulting abroad project (CAP) where students work with a company on a real-world overseas project. A representative from a global company/organization briefs students on a specific problem in an overseas market and students develop a case study detailing how they would resolve the issue. Students then travel to the host country where they provide recommendations to company executives as part of a final presentation. After returning from the CAP, students are encouraged to use the summer to continue gaining practical experience through an optional internship.

The second year of the program consists of a capstone course and electives. The capstone course in business strategy has an intramural case-based competition where the students utilize all the core knowledge they have acquired throughout the program. Through the balance of elective courses, students have the option to customize their studies to their specific career goals. Students may choose from more than 10 areas of specialty, including concentrations and certificates, to provide a focus in up to two areas.

Policies governing transfer credit, residence requirements, course waivers, and proficiency exams can be found at the program's website (<http://www.business.gwu.edu/gmba>) or by contacting the M.B.A. program office. Admission for this program is available for the fall semester only.

PROFESSIONAL MASTER OF BUSINESS ADMINISTRATION

The Professional MBA is a 55.5 credit program designed for working professionals who are looking to advance in their

career or industry and have at least two years of professional work experience. The curriculum incorporates consistent emphasis on application of concepts and analytical tools to current management problems. There is a focus on teamwork and communication skills through team projects with an emphasis on private and public sector issues.

The core of the program mirrors the Global MBA (p. 156); however students in the Professional MBA do not complete the consulting abroad project (CAP). Professional MBA students wishing to participate in a short-term study abroad program may do so as part of their elective coursework and at least 10 options are usually available in a one to two week format each calendar year.

After completing a majority of the core curriculum, students have the option to customize their studies to their specific career goals through elective courses. Students may choose from more than 10 areas of specialty, including concentrations and certificates, to provide a focus in up to two areas.

The program has three delivery options:

Cohort Option

Through the cohort option, students will complete the first three semesters of coursework (including summer) with the same core group of students. The format includes coursework taking place Tuesday evening and Saturdays during the first year. After the first year, students are free to complete the remaining degree requirements at their own pace. The program can be completed in as few as two years or a maximum of five years; admission for this option is only available for the Fall semester.

Self-paced Option

The self-paced option is designed for working professionals who are looking for an extremely flexible graduate education while continuing to work full-time. Students may register for one or more courses each semester and courses are offered year round. The program can be completed in as few as two years or a maximum of five years; admission for this option is available in the Fall or Spring semester.

Online Option

The online option may be completed entirely online and follows the same coursework as the other Professional MBA options. It is designed for working professionals located anywhere in the world who need ultimate flexibility in completing their program. The online option is designed to be completed in three years, however the program can be accelerated through short-term study abroad opportunities and intensive elective coursework or extended out to five years. Admission for this option is available in the Fall, Spring, or Summer semesters.

Policies governing transfer credit, residence requirements, course waivers, and proficiency exams can be found on the GWSB Professional MBA website (<http://www.business.gwu.edu/pmba>) or by contacting the M.B.A. program office.

www.business.gwu.edu/pmba) or by contacting the M.B.A. program office.

MASTER OF SCIENCE IN BUSINESS ANALYTICS

The Master of Science in Business Analytics is designed to prepare students for careers in helping organizations make better decisions through analytics. The program is designed for those with quantitative backgrounds looking to gain a competitive edge before entering the job market and for those working in analytics and looking to further develop their analytic skills. The program has a rigorous and balanced curriculum that addresses the growing need for analytics professionals in organizations.

The curriculum is a blend of foundational courses in descriptive, predictive, and prescriptive analytics; elective courses in analytics applied to a specific functional area or industry; workshops in communication, team, and project management; and hands-on exposure to industry-standard analytics tools/software. The program culminates in a practicum in which students complete an industry-related project, working in teams on a real problem and presenting their findings to the client firm at the end of the project.

The 33-credit hour program is offered in an intensive 10-month format designed for the full-time student and in a part-time, two-year format designed for the working professional. The program consists of:

25.5 credits of core courses:

DNSC 6201	Intro to Business Analytics
DNSC 6203	Statistics for Analytics
DNSC 6206	Stochastic Fndn: Prob Models
DNSC 6208	Computational Optimization
DNSC 6209	Forecasting for Analytics
DNSC 6210	Decision and Risk Analytics
DNSC 6211	Programming for Analytics
DNSC 6212	Optimization Methods and Applications
DNSC 6216	Business Analytics Skills Workshops
DNSC 6217	Business Analytics Practicum
DNSC 6279	Data Mining
ISTM 6211	Data Warehousing and Online Analytical Processing
7.5 credits of application electives	

MASTER OF SCIENCE IN FINANCE

The Master of Science in Finance degree is designed to prepare students with specific career interests in the areas of financial management and research. The program of study emphasizes the theoretical foundations of finance and quantitative methods in financial management. Students will be engaged in applied research and modeling using a variety of data sets and computer software packages. The curriculum provides in-depth study of the international and federal government regulatory dimensions of finance.

REQUIREMENTS

The Master of Science in Finance program requires prerequisites (6 credits each in calculus and economics and 3 credits each in financial accounting, managerial finance, and statistics) and 48 credits of course work consisting of:

FINA 6271	Financial Modeling and Econometrics
FINA 6272	Global Financial Markets
FINA 6273	Cases in Financial Management and Investment Banking
FINA 6274	Corporate Financial Management and Modeling
FINA 6275	Investment Analysis and Global Portfolio Management
FINA 6276	Financial Engineering and Derivative Securities
FINA 6277	Comparative Financial Market Regulation and Development
FINA 6278	Financial Theory and Research
FINA 6279	Real Estate Finance and Fixed-Income Security Valuation
FINA 6280	Financial Institution Management and Modeling
FINA 6281	Cases in Financial Modeling and Engineering
FINA 6282	Advanced Financial Econometrics and Modeling

The degree program is designed to be completed in either 12 months of intensive study including a summer session or 24 months of regular study including two summer sessions.

MASTER OF SCIENCE IN INFORMATION SYSTEMS TECHNOLOGY

The Master of Science in Information Systems Technology is designed to provide an in-depth understanding of management information systems and information technology. The Executive Master's in Information Systems Technology is offered on the Virginia Science and Technology Campus.

Applicants with deficiencies in preparation may be required to take prescribed foundation courses before beginning course work in the program. Although scores are not required, applicants who have not previously demonstrated strong academic performance in a related field should submit GRE or GMAT examination scores as additional evidence of their capability to perform competitively at the graduate level.

The program consists of 33 credits of graduate course work. If foundation courses are prescribed, as many as 9 additional credits will be required. Students must take eight core courses and three electives in their chosen area of specialization:

M.S.I.S.T. core - All students take the following:

ISTM 6201	Information Systems Development and Applications
ISTM 6202	Relational Databases
ISTM 6203	Telecommunications and Enterprise Networks
ISTM 6204	Information Technology Project Management
ISTM 6205	Internet Computing
ISTM 6206	Information Systems Security
ISTM 6207	Information Resources Management
ISTM 6210	Integrated Information Systems Capstone

Electives - Select three courses from one of the following areas of specialization:

Management specialization:

ISTM 6221	Management Perspectives in Electronic Commerce
ISTM 6222	IS/IT Strategy and Implementation
ISTM 6223	Technology Entrepreneurship
ISTM 6224	Management of Technology and Innovation

ISTM 6225	Enterprise Architecture
Technical specialization:	
ISTM 6211	Data Warehousing and Online Analytical Processing
ISTM 6213	Enterprise Web and Database Applications
ISTM 6214	Advanced Programming and Business Applications
ISTM 6215	Human-Computer Interaction
General or customized specialization:	
ISTM 6211 through ISTM 6225	

MASTER OF SCIENCE IN PROJECT MANAGEMENT

The Master of Science in project management is designed for professionals who want to enhance their ability to motivate people, integrate complex projects, and achieve cost-effective results. The curriculum focuses on traditional and modern techniques of managing projects in areas that range from new product development to mergers and acquisitions. The degree program is offered both on campus and by distance learning.

REQUIREMENTS

Required: 36 credits of graduate course work

Required courses

DNSC 6202	Mathematics and Statistics for Management
DNSC 6247	Organization, Management, and Leadership
DNSC 6250	Project Management Finance
DNSC 6251	Optimization Models for Decision Making
DNSC 6252	Risk Analysis for Decision Making
DNSC 6254	Risk Management
DNSC 6257	Cost Estimation and Control
DNSC 6258	Executive Decision Making
DNSC 6259	Project Portfolio Management
DNSC 6261	Introduction to Project and Program Management

DNSC 6262	Directed Computational Project Management
DNSC 6267	Planning and Scheduling
DNSC 6269	Project Management Application
Two electives approved by the advisor	

Policies governing transfer credits, course waivers, distance learning requirements, and entrance exam waivers can be found on the Master of Science in Project Management website (<http://www.business.gwu.edu/mspm>).

MASTER OF TOURISM ADMINISTRATION

The Master of Tourism Administration is designed to prepare students for career entry or mid-level management positions in public, commercial, or nonprofit organizations providing visitor services at the local, national, or international level. Students have opportunities to learn from culturally diverse colleagues and from a wide range of visitor-service organizations, as well as from the classroom. Students may choose one of the four formal concentration areas below or may develop an individualized studies program.

The program consists of 36 credits of course work consisting of:

Core courses:

TSTD 6249	Sustainable Destination Development
TSTD 6251	Quantitative Applications in Tourism/Hospitality Management
TSTD 6270	Tourism and Hospitality Management Research

Select courses in the field of concentration as outlined below

Electives

One of the following capstone course series:

TSTD 6283 & TSTD 6297	Practicum and Advanced Topical Studies
TSTD 6998 & TSTD 6999	Thesis Research and Thesis Research

Sustainable tourism management

TSTD 6250	Destination Management
TSTD 6260	Destination Economics
TSTD 6261	Tourism Planning
TSTD 6262	Tourism Policy Analysis

TSTD 6263 Destination Marketing

Event and meeting management

TSTD 6276 Risk Management for Events and Meetings

TSTD 6277 Event Management

TSTD 6278 Conference and Exposition Management

TSTD 6279 Event Entertainment Management

Sport management

TSTD 6264 Sport Marketing

TSTD 6265 Sport Law: Contracts and Negotiations

TSTD 6266 Sport and Event Facility Management

TSTD 6267 Sport Media and Communications

Hospitality management

TSTD 6220 International Hotel Management

TSTD 6221 Hotel/Resort Market Analysis

TSTD 6278 Conference and Exposition Management

TSTD 6296 Travel Information Management Systems

Individualized studies

The student designs a plan of study and provides a brief justification specifying the courses to be taken, and submits it by petition through the faculty advisor.

DOCTOR OF PHILOSOPHY IN BUSINESS ADMINISTRATION

The Doctor of Philosophy in business administration is a highly specialized research degree designed to prepare students who wish to pursue academic and research careers in a particular field of business.

The minimum admission requirement is a bachelor's degree from a regionally accredited college or university, although most applicants have completed a master's degree in an appropriate field. Applicants whose degrees are in fields other than their proposed area of focus are expected to obtain the necessary background either before or soon after admission to the program. Scores on the Graduate Record Examination or the Graduate Management Admission Test are required; scores may not be more than five years old. Students from countries

where English is not the official language and non-native English speakers are required to take either the Test of English as a Foreign Language (TOEFL) or the academic International English Language Testing System (IELTS). Exceptions may be made for applicants who hold a degree from a university located in a country in which English is the official language and also the language of instruction at the university. Minimum acceptable scores for TOEFL are 600 or above (paper exam) or 100 or above (Internet exam); for IELTS, an overall band score of 7.0 with no individual band score below 6.0. The Doctoral Committee does not use specific cutoff points for grade averages and test scores. In making admission decisions it carefully reviews each applicant's entire record and makes its selection on a competitive basis in keeping with enrollment limitations.

The doctoral program consists of two major parts: the pre-dissertation stage and the dissertation stage. The pre-dissertation stage normally involves two years of studies described in an individual study plan developed by the student under the guidance of a committee of at least three faculty advisors. The objective of the dissertation stage is to have the student apply the obtained theoretical and practical knowledge and analytical methods to the resolution of a research problem. The research should be original and result in a contribution, either applied or theoretical, to the existing body of knowledge.

All course work, other educational activities, and required comprehensive evaluations must be completed within five years of matriculation. The total program must be finished in seven years.

The doctoral program is administered and supervised by the Associate Dean and the Committee on Doctoral Studies. For more detailed information on the program, see the Handbook on the Doctoral Program, available in the Doctoral Program Office.

SPECIAL PROGRAMS

World Executive Master of Business Administration

The World Executive Master of Business Administration program is designed for accomplished managers and professionals to enhance their organizational effectiveness. The program has a general management focus, with a strong emphasis on leadership, global and local environments, and mastery of key business functions. The World Executive Master of Business Administration is completed in 16 months. The 52.5-credit program includes core courses, integrative topical courses, electives, residencies, consulting practicums, and a leadership coaching component. See the World Executive M.B.A. webpage (<http://www.business.gwu.edu/emba>).

Healthcare Master of Business Administration

The Healthcare Master of Business Administration is designed for working professionals who wish to expand their knowledge of business through an M.B.A. program with a specialization in health care administration. Structured as a part of the Professional Master of Business Administration, the 52.5-credit-hour program is delivered online, with courses in 7-week modules, and can be completed in two years. The core curriculum is the same as that of the Global and Professional M.B.A., building a solid foundation of business ethics, leadership and organizations, and global perspectives and an understanding of finance, accounting, key human resource management principles, and strategy. The Healthcare M.B.A. consists of 23 core business courses and 12 elective courses specific to health care. See the Healthcare Master of Business Administration webpage (<http://www.mbahc.info>) for more information.

Executive Master of Science in Information Systems Technology

The Executive Master of Science in Information Systems Technology is a 36-credit multidisciplinary program for high-potential, mid-level managers and senior executives. The curriculum focuses on the role of information systems and behavioral and decision sciences in problem solving and decision making. The program is designed to meet the needs of individuals from a variety of professional and educational backgrounds; applicants generally are expected to have a minimum of seven years of professional experience. The program enrolls one cohort per year, with a fixed sequence of courses during a 15-month period. Classes meet on alternating Fridays and Saturdays. The faculty consists of a core of full-time professors, augmented by recognized leaders in particular disciplines and distinguished guest lecturers from government and industry. Courses in this program are listed in the 6400 series under Information Systems and Technology Management.

Master of Science in Government Contracts

The Master of Science in Government Contracts program is designed to give working professionals the knowledge and skills necessary to excel in the world of federal acquisition and is intended for professionals from a variety of acquisition-related jobs in both government and private industry. The program blends the study of government procurement law and policy, taught by the GW Law School, with a core business curriculum taught by the School of Business. The M.S.G.C. program can be completed in 24 months in evening or online classes. The 36-credit program includes core business courses, core government contract law courses, government contract electives, and a research and writing capstone course.

Joint Degree Programs

Students may work concurrently toward both the Juris Doctor degree and the Master of Business Administration. In consultation with their faculty advisors, students in these programs may transfer up to 14 credits of Law School course work to their M.B.A. program and 12 credits of School of Business course work to fulfill requirements for the J.D. Students must be admitted separately both to the Law School and to the School of Business and must meet all requirements in each degree program prior to receiving either diploma. It is possible for a student to complete work for both degree programs within four years.

In addition, a joint degree program is offered with the Elliott School of International Affairs. The joint Master of Business Administration and Master of Arts is available to students who plan a focus on international business. As part of this program, each School accepts up to 12 credit hours of course work from the other school in fulfillment of its degree requirements. Students must be admitted separately both to the School of Business and to the Elliott School of International Affairs and must meet all requirements for each program prior to receiving either diploma.

Within the School of Business, students may elect a joint Master of Business Administration and Master of Science in Finance, or Master of Science in Project Management; students must be admitted simultaneously to both degree programs to be eligible for the joint degree. Students interested in the joint M.B.A. and Master of Science in Information Systems Technology may be either simultaneously or consecutively admitted to both degree programs. All joint degree programs are completed simultaneously.

ACCOUNTANCY

Many of our accountancy professors have ties to high-profile firms and agencies. They work hard to provide students with unprecedented access to executives, government officials and internships. The students, in turn, get unusual hands-on experience, such as the opportunity to study the stock market in a classroom that looks like a Wall Street trading venue. Accountancy at GW's School of Business (<http://business.gwu.edu>) has its own undergraduate degree: Bachelor of Accountancy.

UNDERGRADUATE

Bachelor's program

- Bachelor of Accountancy (p. 151)

GRADUATE

Master's program

- Master of Accountancy (p. 155)

FACULTY

Professors S.H. Kang, A. Lusardi, C. Linsley (*Teaching*)

Associate Professors K.E. Smith, L.C. Moersen, F. Lindahl, R.L. Tarpley, A. Gore (*Chair*), S. Kulp, C.L. Jones (*Industry*),

Assistant Professors Y. Xue, Y. Zhang, L. Tan, K. Ray, Y. Zou

DECISION SCIENCE

GRADUATE

Master's programs

- Master of Science in Business Analytics (p. 162)
- Master of Science in Project Management (p. 159)

FACULTY

Professors E.H. Forman, P.W. Wirtz, P.K. Bagchi, R. Soyer (*Chair*), T. Glickman, M.M. Tarimcilar

Associate Professors S.Y. Prasad, S. Kanungo, Y.H. Kwak, A. Jarrah, P. Delquie, S. Jain

Assistant Professors H. Khamooshi, M.E. Matta, M.A. Lejeune, M. Altug, J.S. Kuttunen

MASTER OF SCIENCE IN BUSINESS ANALYTICS

The Master of Science in Business Analytics is designed to prepare students for careers in helping organizations make better decisions through analytics. The program is designed for those with quantitative backgrounds looking to gain a competitive edge before entering the job market and for those working in analytics and looking to further develop their analytic skills. The program has a rigorous and balanced curriculum that addresses the growing need for analytics professionals in organizations.

The curriculum is a blend of foundational courses in descriptive, predictive, and prescriptive analytics; elective courses in analytics applied to a specific functional area or industry; workshops in communication, team, and project management; and hands-on exposure to industry-standard analytics tools/software. The program culminates in a project in which students complete an industry-related project, working in teams on a real problem and presenting their findings to the client firm at the end of the project.

REQUIREMENTS

The 33-credit program is offered in an intensive 10-month format designed for the full-time student and in a part-time, two-year format designed for the working professional. The program consists of:

24 credits of core courses:

DNSC 6201	Intro to Business Analytics
DNSC 6203	Statistics for Analytics
DNSC 6206	Stochastic Fndn: Prob Models
DNSC 6208	Computational Optimization
DNSC 6209	Forecasting for Analytics
DNSC 6210	Decision and Risk Analytics
DNSC 6211	Programming for Analytics
DNSC 6212	Optimization Methods and Applications
DNSC 6279	Data Mining
ISTM 6211	Data Warehousing and Online Analytical Processing
7.5 credits of application electives.	

FINANCE

UNDERGRADUATE

Bachelor's programs

- Bachelor of Business Administration (p. 152)
- Bachelor of Science with a major in finance (p. 153)

GRADUATE

Master's program

- Master of Science in the field of finance (p. 158)

FACULTY

Professors T.M. Barnhill, W. Handorf, M.S. Klock, I.G. Bajoux-Besnainou, G.M. Jabbour, R. Van Order (*Chair*)

Associate Professors N.G. Cohen, P.S. Peyser, A.J. Wilson, R. Savickas, S. Agca, G. Jostova, A. Baptista, M. Hwang, T. Geurts (*Teaching*)

Assistant Professors C.A. Pirinsky, B.J. Henderson, O. Altinkilic

INFORMATION SYSTEMS AND TECHNOLOGY MANAGEMENT

UNDERGRADUATE

Bachelor's programs

- Bachelor of Business Administration with a concentration in information systems and technology management (p. 152)
- Combined Bachelor of Business Administration and Master of Science in Information Systems Technology (p. 163)

GRADUATE

Master’s program

- Master of Science in Information Systems Technology (p. 163)
- Executive Master of Science in Information Systems Technology (p. 163)

FACULTY

Professors E.J. Cherian, M.J. Granger, E.G. Carayannis

Associate Professors R.G. Donnelly, W.H. Money, J. Artz, S. Dasgupta (*Chair*)

Assistant Professors R.A. Lumley, W. Duan

COMBINED BACHELOR OF BUSINESS ADMINISTRATION AND MASTER OF SCIENCE IN INFORMATION SYSTEMS TECHNOLOGY

REQUIREMENTS

See the School of Business for programs of study leading to the combined degree program leading to the Bachelor of Business Administration and Master of Science in Information Systems Technology.

EXECUTIVE MASTER OF SCIENCE IN INFORMATION SYSTEMS TECHNOLOGY

REQUIREMENTS

The Executive Master of Science in Information Systems Technology is a 36-credit multidisciplinary program for high-potential, mid-level managers and senior executives. The curriculum focuses on the role of information systems and behavioral and decision sciences in problem solving and decision making. The program is designed to meet the needs of individuals from a variety of professional and educational backgrounds; applicants generally are expected to have a minimum of seven years of professional experience. The program enrolls one cohort per year, with a fixed sequence of courses during a 15-month period. Classes meet on alternating Fridays and Saturdays. The faculty consists of a core of full-time professors, augmented by recognized leaders in particular disciplines and distinguished guest lecturers from government and industry. Courses in this program are listed in the 6400 series under Information Systems and Technology Management.

MASTER OF SCIENCE IN INFORMATION SYSTEMS TECHNOLOGY

The Master of Science in Information Systems Technology is designed to provide an in-depth understanding of management information systems and information technology. The Executive Master’s in Information Systems Technology is offered on the Virginia Science and Technology Campus.

Applicants with deficiencies in preparation may be required to take prescribed foundation courses before beginning course work in the program. Although scores are not required, applicants who have not previously demonstrated strong academic performance in a related field should submit GRE or GMAT examination scores as additional evidence of their capability to perform competitively at the graduate level.

REQUIREMENTS

The program consists of 33 credits of graduate course work. If foundation courses are prescribed, as many as 9 additional credits will be required. Students must take eight core courses and three electives in their chosen area of specialization:

Required M.S.I.S.T. core courses:

ISTM 6201	Information Systems Development and Applications
ISTM 6202	Relational Databases
ISTM 6203	Telecommunications and Enterprise Networks
ISTM 6204	Information Technology Project Management
ISTM 6205	Internet Computing
ISTM 6206	Information Systems Security
ISTM 6207	Information Resources Management
ISTM 6210	Integrated Information Systems Capstone
Three electives from one of the following areas of specialization:	

Management specialization:

ISTM 6221	Management Perspectives in Electronic Commerce
ISTM 6222	IS/IT Strategy and Implementation
ISTM 6223	Technology Entrepreneurship

ISTM 6224 Management of Technology and Innovation

ISTM 6225 Enterprise Architecture

Technical specialization:

ISTM 6211 Data Warehousing and Online Analytical Processing

ISTM 6212

ISTM 6213 Enterprise Web and Database Applications

ISTM 6214 Advanced Programming and Business Applications

ISTM 6215 Human-Computer Interaction

General or customized specialization:

ISTM 6211 through ISTM 6225

INTERNATIONAL BUSINESS

UNDERGRADUATE

Bachelor's program

- Bachelor of Business Administration with a concentration in International Business (p. 152)

FACULTY

Professors Y.S. Park, H.G. Askari, F. Robles, R. Weiner (*Chair*), J. Yang, S.S. Rehman, D. Guthrie, D. Leipziger, J.W. Spencer

Associate Professors R.W. Click, J. Ferrer (*Research*), J. Forrer (*Research*), L.A. Riddle, A. Phene, M. Ayyagari, H. Berry

Assistant Professors R. Lucea, S. Jandhyala, H. Bogaard, W. Chen, A. Helm

MANAGEMENT

FACULTY

Professors J. Bailey, P.M. Swiercz (*Chair*), D. Hawkins, L. Yu, D.C. Kayes

Associate Professors P. McHugh, G.T. Solomon, L. Delpy Neirotti, A. El Tarabishy (*Teaching*), E. Mullen, N.S. Hill, S. Levy (*Teaching*)

Assistant Professors S. Singh, N.A. Cohen, M. Hyman (*Teaching*)

MARKETING

FACULTY

Professors P.A. Rau (*Interim Chair*), R.S. Achrol, L.M. Maddox, S.S. Hassan, T. Novak, D. Hoffman

Associate Professors M.L. Liebrezn-Himes, V. Perry, S. Elliott

Assistant Professors A.V. Krasnikov, S. Ham

STRATEGIC MANAGEMENT AND PUBLIC POLICY

UNDERGRADUATE

Bachelor's program

- Bachelor of Business Administration (p. 152) with a concentration in business economics and public policy

FACULTY

Professors H.J. Davis, D.J. Lenn, J.H. Beales III (*Chair*), J.J. Griffin

Associate Professors J.B. Thurman, J.W. Cook, E.J. Englander, J. Forrer (*Research*), J. Rivera

Assistant Professors E.H. Kim, J. Walter, K. Martin, S. Patnaik, T. Radin (*Teaching*)

ELLIOTT SCHOOL OF INTERNATIONAL AFFAIRS

Dean M.E. Brown

Associate Deans H. Agnew, L. Stephenson, D. Shaw

The Elliott School of International Affairs offers graduate and undergraduate programs to prepare individuals for understanding and working in an increasingly globalized world.

The historical roots of the Elliott School extend back to the establishment of the School of Comparative Jurisprudence and Diplomacy in 1898. In 1966, the School separated from the School of Government, Business, and International Affairs to become an independent unit, the School of Public and International Affairs. In 1987, the name was changed to the School of International Affairs, and in 1988 the School was renamed in honor of Evelyn E. and Lloyd H. Elliott. Lloyd Elliott was the President of The George Washington University from 1965 to 1988.

The Elliott School offers the Master of Arts in the fields of international affairs, Asian studies, European and Eurasian studies, global communication, international development studies, international science and technology policy, international trade and investment policy, Latin American and hemispheric studies, Middle East studies, and security policy studies; the Master of International Policy and Practice degree for mid-career professionals; and the Master of International Studies degree for students enrolled in master's degree programs at international universities with which the Elliott School has a special partnership.

These programs provide advanced academic and professional training in international affairs as preparation for employment in public, private, and nonprofit sectors. Focusing on major historical and contemporary issues in international affairs, the programs are both interdisciplinary and multidisciplinary, combining courses offered through the School with courses offered by other schools and departments of the University.

REGULATIONS

- Undergraduate Degree Requirements (p. 165)
- Graduate Degree Requirements (p. 167)

Undergraduate Degree Requirements

Residence

Students must complete at least 60 credit hours in residence. In addition to requirements listed under University Regulations, students wishing to transfer from another division of the University into a degree program in the Elliott School must have completed 24 credits at GW with a cumulative grade-point average of 3.0 or above at the time of transfer. Except in well-documented extenuating circumstances, at least 9 of the final 15 credit hours must be completed in residence.

Academic Standing

In order to graduate, a student must complete 120 credit hours with a cumulative grade-point average of 2.0. Courses in lifestyle, sport, and physical activity are not counted toward the degree. Some ROTC classes are excluded as well. Rules governing Academic Standing are applicable to students enrolled for a full-time program (12 credits or more) during the fall or spring semester.

Semester Warning – A student whose cumulative grade-point average is less than 2.0 after attempting a minimum of 12 credit hours is placed on semester warning at the end of the semester and is required to take corrective measures, including limitation of course load to no more than 13 credit hours. A student on semester warning will be placed on probation if, after attempting an additional 12 credits in one semester, the cumulative GPA remains below 2.0. For part-time students and those enrolled in the summer, a semester is interpreted to mean a time interval in which at least 12 credits have been attempted.

Probation – A student whose cumulative grade-point average is less than 2.0 but at least 1.0 any time after having attempted a minimum of 24 credit hours is placed on probation. A student will be continued on probation if, after the initial semester on probation, the cumulative GPA remains below 2.0 but is above 1.0. For part-time students and those enrolled in summer sessions, a semester is interpreted to mean a time interval in which at least 12 credit hours have been attempted. A student on probation is limited to no more than 13 credit hours of course work the following semester. A student is returned to good standing if the cumulative GPA is at least 2.0 after completion of a minimum of 12 additional credits.

Suspension – Failure to resume or reach a cumulative grade-point average of 2.0 after two successive semesters on probation results in suspension. A student whose cumulative grade-point average falls below 1.0 any time after having enrolled in a minimum of 24 credit hours as a student in the Elliott School will be suspended. Students who are suspended for poor scholarship may apply for readmission after the lapse of one fall or spring semester. To be considered for readmission, the student must submit evidence to the Dean's Council of conduct during absence from the University which indicates that the student will profit from readmission. A student suspended twice for poor scholarship will not be readmitted.

Timely Progress Toward the Degree – Students who fail to make adequate and timely progress toward the degree, through repeated leaves or repeated failure to complete an appropriate number of credits per semester, may be dismissed from the University (see Right to Dismiss Students under University Regulations). Students dismissed on these grounds may apply for readmission after supplying sufficient evidence of academic promise.

Dean's Honor List – The name of every student who attains a 3.75 grade-point average in course work is placed on the Dean's Honor List for that semester. Appearance on the list is limited to full-time students registered for a minimum of 15 credit hours with letter grades (excludes pass/no pass and audited courses) in a given semester and to part-time students registered for a minimum of 15 credit hours with letter grades over a period of two consecutive semesters, which may include a summer term.

Special Honors – In addition to the general requirements stated under University Regulations, a candidate for Special Honors in an Elliott School major must have attained a 3.7 grade-point average overall and complete with an A- or above either an Elliott School or Honors senior seminar, or an Elliott School or Honors senior thesis.

General Elliott School Policies

Scholarship Performance in the Major – All courses indicated as Requirements for the Majors (see above), including third-year language proficiency, must be completed with grades no lower than C-. If a student receives a grade of D+, D, or D- in any of these courses, the credit will count toward the degree, but the student must either repeat the course or, with approval of the academic advisor, substitute another course, in either case with a grade no lower than C-. If the student must repeat the course, credit for the repetition does not count toward the degree, and grades for both the initial course and the repeated course are used to compute the GPA. If the Office of Academic Advising allows another course to be substituted, the initial course is considered to be an elective. The student is expected to consult the Office of Academic Advising in all matters affecting the program of study, such as changes, substitutions, withdrawals, or transfer of credit from other institutions.

Incompletes – Conditions under which the symbol *I* (Incomplete) may be assigned are described under University Regulations. Incomplete course work must be completed no later than one calendar year from the last day of the examination period of the semester or summer session in which the indication of *I* was assigned. When work for the course is complete, the grade earned will be indicated in the form of *I*, followed by the final grade. The indication of *I* cannot be removed from the transcript. An indication of *I* that is not changed within this period automatically becomes an *IF*. The *I* cannot be changed by reregistering for the course at GW or by taking its equivalent elsewhere. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the Office of Academic Advising and Student Services for additional time in which to complete the work of the course. Such petitions should be submitted within a year of the assignment of the *I*. Students will not be permitted to register for any additional course work if they have more than two Incompletes on their record.

Pass/No Pass Option – A student who has a cumulative grade-point average of 2.5 or better may, with the approval of an advisor and the dean, take one course per semester

and receive a grade of *P*, Pass, or *NP*, No Pass, which will be recorded on the student's transcript but will not be reflected in the cumulative grade average. A student must sign up for such an option at the Office of Academic Advising within the first eight weeks of classes. Under no circumstances may a student change from pass/no pass status to graded status, or vice versa, after the end of the eighth week of the semester. Foreign language courses and required courses in the student's degree program (except those in which the grade of *P* or *NP* is normally assigned) may not be taken on a pass/no pass basis. Freshmen may not elect to take a course on a pass/no pass basis. A transfer student may not elect to take a course on a pass/no pass basis until the second semester of enrollment in the University. No more than six courses in which the grade of *P* or *NP* is assigned will apply toward the degree, including courses in which the grade of *P* or *NP* is normally given.

Academic Work Load – The normal academic work load for a full-time student is 15 credit hours. A full-time student not on probation may take a course load of up to 17 credit hours. A student with a strong academic record may take up to 18 credit hours with the approval of the Office of Academic Advising (additional tuition charges apply). Students doing internships or working are advised to reduce their course load.

Study Abroad – Students are encouraged to study abroad. Those wishing to study abroad must consult their academic advisor and the University's Office for Study Abroad. A maximum of 34 credits may be transferred in from study abroad. GW courses taken abroad for GW credit do not apply to this maximum (i.e., specific courses taken through GW Study Centers and GW Summer Abroad for which students receive GW credit as opposed to transfer credit). Students must secure prior approval from the Office of Academic Advising for any plan of study abroad if the credit earned is intended to apply to the degree program in which they are registered. Students must apply to a program from the University's List of Study Abroad Programs. A catalogue or other description of the study abroad program must be presented for consideration together with detailed descriptions of the courses to be taken. See Study Abroad Programs.

Internships – Internships offer students the opportunity to make practical use of the knowledge they acquire in the classroom. Undergraduates who have completed at least 30 credit hours and have a cumulative grade-point average of at least 2.5 are eligible to arrange internships for credit (to a total maximum of 6 credits toward the degree). Transfer students are not eligible to arrange internships for credit until their second semester at GW. Academic work in the field of the internship is required. A zero-credit internship is also available. Internships are available in the private, nonprofit, and public sectors. Students must register for internships (even if for zero credit) through the Office of Academic Advising but are responsible for locating their own internships; listings are posted at [gwired.gwu.edu/career](http://www.gwired.gwu.edu/career) (<http://www.gwired.gwu.edu/career>).

Double Majors – Students who complete the requirements of two majors in the Elliott School (such as international affairs and Asian studies) may graduate with a double major. Consult the Office of Academic Advising to officially declare both majors on the appropriate form.

Students in the Elliott School may take a second major offered by Columbian College of Arts and Sciences (majors in communication, English and creative writing are excluded), or the School of Engineering and Applied Science or School of Business (finance major only). Permission for the second major must be obtained from the appropriate administrative office of the other school.

Students in Columbian College of Arts and Sciences and the School of Engineering and Applied Science may take a second major in the Elliott School. Students wishing to pursue these options must request approval through the Elliott School Office of Academic Advising. Students must complete all degree requirements for their major in their home school in order to graduate with a second major from the other school.

In all cases, double majors do not result in two degrees. See Double Majors and Double Degrees under University Regulations.

Graduate Degree Requirements

Scholarship Requirements

Information on grades and computing the grade-point average is under University Regulations. Courses taken to satisfy degree requirements cannot be taken on a Credit (CR) basis, with the exception of some capstone courses.

Graduate students are required to maintain a minimum cumulative grade-point average of 3.0. A student whose grade-point average falls below 3.0 or who receives a grade of *F* in a course at any point after completing 9 credit hours is placed on probation. This probation extends through the period in which the student next attempts up to 12 credits of work, including prescribed courses. The student's academic advisor will meet with the program director and/or academic dean to review the student's record. The student's account will be put on hold until the student has met with the program director and/or academic dean to discuss the terms of probation. A student's program may be restricted by the program director if deemed necessary.

During the probation period, the student's performance will be monitored to determine suitability for continued study. The Office of Academic Advising and Student Services will inform the program director and/or academic dean whether the student is no longer on probation or is eligible for dismissal. Incomplete grades are not allowed during the probation period and are grounds for dismissal.

A student who fails to raise the cumulative grade-point average to 3.0 or above by the end of the period of probation or who

is subject to probation for a second time at any point during the academic program is eligible for dismissal. If a student is eligible for dismissal, the academic dean in consultation with the program director will decide whether the student is to be dismissed from the Elliott School.

The symbol *I* (Incomplete) indicates that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work of the course. When work for the course is complete, the grade earned will be indicated by the letter *I* followed by the letter grade. An Incomplete cannot be made up after the lapse of one calendar year. An Incomplete that is not made up by the end of one calendar year becomes a grade of *IF* on the student's record. An Incomplete cannot be removed by reregistering for the course. If there are more than two Incompletes outstanding on the record, the student is not permitted to register for any courses, including the capstone course.

Readmission

A graduate student who has not been continuously enrolled or on approved leave of absence must file an application for readmission the semester before planning to return to school.

General Requirements for Master of Arts Degree Programs

Programs leading to the Master of Arts degree require a minimum of 40 credit hours of graduate course work and include a thesis option. Candidates for the degree of Master of Arts are required to submit a plan of study (fields, supporting course work, etc., as endorsed by the program director) to the Office of Academic Advising and Student Services for final approval by the end of the first semester in residence. Master's degrees are awarded after the student has completed the required course work and an acceptable thesis (if one is elected) and has satisfied the foreign language requirement (if required).

Students with sufficient academic background may waive a core course with approval of a designated faculty member from the department concerned. A course waiver does not reduce the number of credits required for the degree. Under special circumstances, upper-level undergraduate courses may be counted toward the master's degree when registration for graduate credit has been approved at the beginning of the course by the program director, the instructor, and the Office of Academic Advising and Student Services. The student who takes an undergraduate course for graduate credit is expected, by arrangement with the instructor, to do work at the graduate level in addition to the regular work of the course. Normally, no more than 9 credits of approved undergraduate course work may be taken for credit toward a graduate degree. Academic credit counted toward a previous degree may not be counted toward the master's degree.

All master's degree candidates must complete degree requirements within five years of their admission to the

program. Students who are unable temporarily to continue their studies may request a leave of absence not to exceed one year. Extensions beyond the five-year period may be granted in exceptional circumstances, but the student will be required to register and pay for 1 credit of Continuous Enrollment each semester.

Students are encouraged (and in some cases required) to take professional skills-based courses (IAFF 6502 Professional Skills I-IAFF 6503 Professional Skills II) and should consult their program guidelines for limits on the number of credits that can count toward their degree program. The maximum allowed by the Elliott School is four credits.

No more than a combined total of 6 graduate credit hours may be transferred from other accredited institutions or from non-degree status, and these may be accepted only under limited conditions of time, grades, and relevance to the student's program.

Foreign Language Requirements

In most degree programs, a candidate for the degree of Master of Arts must demonstrate reading and speaking proficiency in a modern foreign language. All students in regional programs (including those who are not native speakers of English) must demonstrate proficiency in a language appropriate to the study of the specific region. Students should consult their program guidelines for specific requirements, academic credit, and options for fulfilling the language requirement.

Capstone/Thesis Option

Every student must successfully complete a capstone or, with approval of the program director, thesis option near the conclusion of the master's program. For the capstone, the student must have a 3.0 grade-point average and must have completed or registered for 30 credit hours. If there is a lapse of time between completion of other course work and the capstone, the student must be continuously enrolled during this period. A student who fails to complete successfully the capstone may repeat it with the permission of the dean. If the student fails a second time, no further opportunity to complete the capstone will be permitted and the degree will not be conferred. Details concerning the capstone course vary across programs; students should consult their program guidelines for details.

Exceptional students may write a thesis if they qualify by having a minimum 3.5 grade-point average for at least 20 credit hours of course work in their program and developing a formal thesis proposal approved by their prospective thesis advisor and the program director.

The thesis subject should be selected as early as possible so as to permit effective integration with the course work. A student will not be permitted to register for Thesis Research (IAFF 6998 Thesis-IAFF 6999 Thesis) until the thesis subject has been formally submitted to the Office of Academic Advising. Programs may set additional requirements in order to qualify

to write a thesis. The subject must be approved by the member of the full-time faculty under whom the thesis is to be written, a second member of the faculty who will serve as a reader, and the student's program director. The thesis in its final form must have the approval of the thesis director and one other reader. All theses must be submitted electronically and meet the formatting and other requirements set forth at GW's Electronic Theses and Dissertations Submission website (<http://library.gwu.edu/etds>)

Payment of tuition for thesis research entitles the candidate, during the period of registration, to the advice and direction of the thesis director and the other reader. In case a thesis is unfinished, the student must maintain continuous enrollment and is allowed one calendar year to complete it. If the preparation of the thesis extends beyond the additional calendar year, the student must register for the entire 6 hours of thesis again and pay tuition as for a repeated course.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in Asian studies (<http://bulletin.gwu.edu/international-affairs/undergraduate-programs/ba-asian-studies>)
- Bachelor of Arts with a major in international affairs (<http://bulletin.gwu.edu/international-affairs/undergraduate-programs/ba-international-affairs>)
- Bachelor of Arts with a major in Latin American and Hemispheric studies (<http://bulletin.gwu.edu/international-affairs/undergraduate-programs/ba-latin-american-hemispheric-studies>)
- Bachelor of Arts with a major in Middle East studies (<http://bulletin.gwu.edu/international-affairs/undergraduate-programs/ba-middle-east-studies>)

Minors

- Minors (<http://bulletin.gwu.edu/international-affairs/undergraduate-programs/minor-international-affairs>)

GRADUATE

Master's programs

- Master of Arts in the field of Asian studies (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-asian-studies>)
- Master of Arts in the field of European and Eurasian studies (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-european-eurasian-studies>)
- Master of Arts in the field of global communication (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-global-communication>)
- Master of Arts in the field of international affairs (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs>)

- Master of Arts in the field of international development studies (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-development-studies>)
- Master of Arts in the field of international science and technology policy (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-science-technology-policy>)
- Master of Arts in the field of international trade and investment policy (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-trade-investment-policy>)
- Master of Arts in the field of Latin American and hemispheric studies (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-latin-american-hemispheric-studies>)
- Master of Arts in the field of Middle East studies (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-middle-east-studies>)
- Master of Arts in the field of security policy studies (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-security-policy-studies>)
- Master of International Policy and Practice (<http://bulletin.gwu.edu/international-affairs/graduate-programs/international-policy-practice>)
- Master of International Studies (<http://bulletin.gwu.edu/international-affairs/graduate-programs/international-studies>)

Combined programs

- Joint Master of Arts and Juris Doctor (<http://bulletin.gwu.edu/international-affairs/graduate-programs/joint-ma-jd>)
- Joint Master of Arts and Master of Business Administration (<http://bulletin.gwu.edu/international-affairs/graduate-programs/joint-ma-mba>)
- Dual Master of Arts and Master of Public Health (<http://bulletin.gwu.edu/international-affairs/graduate-programs/joint-ma-mph>)

CERTIFICATES

The Elliott School of International Affairs offers a program of graduate certificates as listed below. The program is open to all graduate students presently enrolled in the Elliott School, Columbian College of Arts and Science, the Graduate School of Education and Human Development, the School of Business, and the School of Public Health and Health Services at GW, and to graduate students from other universities, persons who have already earned a graduate degree, and persons with a bachelor's degree and a minimum of eight years of relevant work experience. Applicants who have less than eight years of professional work experience are eligible to apply but must submit the same application materials required of other MA degree programs. Transfer credit from non-GW institutions is not accepted into any graduate certificate program. No more than 6 credits of graduate course work taken in any degree or

non-degree status within The George Washington University, including the Elliott School, may be included in any graduate certificate program. Additional information is available in the Elliott School Graduate Admissions office.

Graduate certificate programs

- International science and technology policy (<http://bulletin.gwu.edu/international-affairs/certificate/international-science-technology-policy>)
- Political psychology (<http://bulletin.gwu.edu/international-affairs/certificate/political-psychology>)
- Global gender policy (<http://bulletin.gwu.edu/international-affairs/certificate/global-gender-policy>)

FACULTY

University Professors M. Barnett, L.A. Etzioni, M. Finnemore, B. Wood

Professors H.L. Agnew, H.G. Askari, M.A. Atkin, W.H. Becker, E. Berkowitz, S. Biddle, A. Black (*Research*), B.L. Boulter, M.D. Bradley, J. Brinkerhoff, A. Brooks, M.E. Brown, N.J. Brown, J. Chaves, B. Chiswick, J.J. Cordes, W.K. Cummings, H.J. Davis, C.J. Deering, B.J. Dickson, P. Ehrenfreund (*Research*), R. Eisen, R.M. Entman, H.B. Feigenbaum, J. Ferrer (*Research*), C. Fink (*Practice*), J. Foster, L. Fuerth (*Research*), C. Glaser, E.W. Gnehm, R. Grinker, S. Hamano, J. Hershberg, G. Kaminsky, D.K. Kennedy, R.E. Kennedy, Jr., Y.K. Kim-Renaud, P.F. Klarén, J. Kuipers, M. Laruelle (*Research*), J.H. Lebovic, S. Livingston, R. Maguire (*Practice*), M. Marquardt, C. McClintock, B.D. Miller, M.O. Moore, H.R. Nau, D. Ollapally (*Research*), S. Pace (*Practice*), J. Pelzman, J.M. Post, M. Price, S. Rehman, W. Reich, L.P. Ribuffo, F. Robles, P. Rollberg, R.W. Rycroft, S. Sell, F. Sesno, D. Shambaugh, J. Sherry, S.C. Smith, M. Sodaro, R.H. Spector, R. Steinhardt, R. Sutter (*Practice*), R. Thornton, N.S. Vonortas, P. Wahlbeck, S. Waisman, R. Weiner, S. Wolchik, H. Wolman, J. Yang, A.M. Yezer, A. Zimmerman, M. Lynch, J. Shambaugh

Associate Professors S. Aaronson (*Research*), S. Aday, M. Atia, M. Ayyagari, S. Balla, H. Berry, J. Blomster, N. Blyden, A. Bowie, G. Brazinsky, Y. Captain, P. Carrillo, A. Castleman (*Research*), E. Chacko, M.X. Chen, R.W. Click, I. Creppell, A.S. Dent, A. Downes, M. Edberg, D.S. Eglitis, M. Essees, H.J. Farrell, I. Feldman, A. Fostel, M. Gonglewski, D.A. Grier, H.E. Hale, B. Hopkins, H.M. Harrison, D. Houry, M. King, S. Lubkemann, M. McAlister, E.A. McCord, S. McHale, M. Mochizuki, K. Morgan, B. Orttung D.R. Rain, L.A. Riddle, S. Roberts (*Practice*), R. Robin, S. Robinson, R.M. Samaniego, J. Spear, J. Spencer, M.B. Stein, S. Suranovic, A. Swaine, E.J. Teitelbaum, C. Welt, P.D. Williams, J.H. Williams, D. Yang, P.N. Zhang,

Assistant Professors C. Arrington, E. Aviv, P. Bardet, W. Chen, T. Christov, J.F. Daniel, M. Danielson, L. Engel, E. Finkel, E. Grynasviski, I.L. Hanami, L. Hughes, S. Jandhyala, R. Jedwab, S. Kaplan, M. Kelso, J. Kim, R. Lucea, C. Mylonas, E. Saunders, D.

Shaw, R.J. Shepherd, T. Sinclair, Z. Szajnfarber, C. Talmadge, O.
Timoshenko, E. Uretsky, A. Ziegfeld

MILKEN INSTITUTE SCHOOL OF PUBLIC HEALTH

Dean L.R. Goldman

Senior Associate Dean J.J. Reum

Associate Dean J. DeLoia, K. Horn, P. Vigilance

Established in July 1997 as the School of Public Health and Health Services, the school brought together three longstanding university programs in the schools of medicine, business and education. In 2014, the school was renamed Milken Institute School of Public Health in recognition of an 80 million dollar gift to the school -- the largest gift ever received by The George Washington University. The only school of public health in the nation's capital, where more than 1,200 students from nearly every US state and more than 38 nations pursue undergraduate, graduate and doctoral-level degrees in public health. Our student body is one of the most ethnically diverse among the nation's private schools of public health. Seven departments form the school: Environmental and Occupational Health, Epidemiology and Biostatistics, Exercise and Nutritional Sciences, Global Health, Health Policy, Health Services Management and Leadership, and Prevention and Community Health.

Degree programs offered by Milken Institute School of Public Health include the Bachelor of Science with majors in exercise science and public health; the Master of Public Health; the Master of Health Administration; the Master of Science in the fields of epidemiology, exercise science, health policy, and public health microbiology and emerging infectious diseases; the Doctor of Public Health; and the Doctor of Philosophy in the field of epidemiology. The Milken Institute SPH offers a Bachelor of Science/Master of Public Health dual degree program and cooperates with several other schools within GW in offering combined degree programs. Minors for undergraduates in schools other than SPH and graduate certificate programs are offered as well.

Mission

The Milken Institute School of Public Health is committed to excellence in scholarship to advance the health of the populations of our local, national, and global communities; Our mission is to provide the best public health educational experience incorporating our core values of scholarship and leadership, scientific rigor and policy analysis, and training to foster the next generation of thought leaders, practitioners, policy makers and scientists who will transform public health worldwide especially for underserved and poor populations.

Vision

As complex global health challenges continue to threaten our health and future, the Milken Institute School of Public Health will be preeminent in training tomorrow's leaders for improving the public's health, conducting translational research and convening the world's top public health leaders and thinkers.

Accreditation

The public health programs of the Milken Institute School of Public Health have full accreditation from the Council on Education for Public Health. In 2008, SPH was awarded a seven-year accreditation through 2015. The program in health services administration is fully accredited by the Commission on Accreditation of Healthcare Management Education. The Athletic Training Education Program is fully accredited by the Commission on Accreditation of Athletic Training Education. Milken Institute School of Public Health is a member of the Association of Schools of Public Health.

REGULATIONS

- Undergraduate Regulations (p. 171)
 - Graduate Regulations (p. 174)
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Undergraduate Regulations

The Milken Institute School of Public Health offers undergraduate programs leading to the degrees of Bachelor of Science in Exercise Science and in Public Health.

Depending on the degree program, 120-124 credits of academic course work must be passed with a cumulative grade-point average of at least 2.0 to complete the degree. General education, major, and other requirements are described in the course curriculum.

Enrollment Status

The University's continuous enrollment policy is very important. Once entered in an undergraduate degree program, students are expected to be continuously registered for at least one credit during all fall and spring semesters and actively engaged in fulfilling the requirements for your degree.

- For fall and spring semester, students must register for one or more credit hours to maintain enrollment status.
- During the summer session, students do not have to be enrolled unless the student is graduating during the summer; in this case, the student should register for Continuous Enrollment (\$35).
- Some additional activities, such as study abroad programs, qualify as continuous enrollment.

Degree seeking student who find it necessary to interrupt active pursuit of your degree may petition to take a Leave of Absence for a specific period of time, limited to a total of one calendar year during the student's program. If the student discontinue active enrollment in degree studies without being granted a leave of absence, or if the student is granted a leave but does not return to active study at the close of the period of approved absence, the student is no longer in status and must apply for readmission and be subject to the regulations and

program requirements then in effect. Please note: readmission to any program is a competitive process and not guaranteed.

Advising

Students partner with advisors to successfully navigate their academic careers through conversations that range from understanding University requirements to exploring relevant interests to finding appropriate campus resources that connect students to a community in which they feel comfortable. Students are thereby empowered to take ownership of, and responsibility for, their educational experiences.

Students need to build a support system that ensures academic success. Professors, faculty advisors, professional advisors, tutors, and/or counselors should be part of that support system. The University Career Center (<http://careerservices.gwu.edu>) and The Writing Center (<http://www.gwu.edu/%7Egwriter>) offer walk-in by-appointment assistance. Personal counseling is available through the office of the Dean of Student Affairs (<http://students.gwu.edu>), the Counseling Center (<http://counselingcenter.gwu.edu>), Disability Support Services (<http://gwired.gwu.edu/dss>), the Multicultural Student Services Center (<http://gwired.gwu.edu/mssc?url=mssc>), and the International Services Office (<http://internationalservices.gwu.edu>).

Academic Standing

A student who is not on semester warning, probation, or suspension is considered to be in good standing. At the undergraduate level, a minimum grade-point average of 2.0 (C) must be maintained and is required to be awarded a degree. All courses taken for credit after matriculation as a degree candidate (including those GWSPH courses transferred in from non-degree status, but excluding those audited or taken for the grade of CR or P/NP) will be used to calculate the grade-point average.

The following rules governing semester warning, probation, and suspension are applicable to students enrolled for a full-time program (12 credit hours or more) during the fall or spring semester. Students enrolled for fewer than 12 credits during the fall or spring semester and students enrolled during the summer sessions are subject to probation or suspension on the basis of their cumulative record, with a "semester" considered to be the time interval in which at least 12 credits have accrued.

Semester Warning

A first-semester student whose cumulative grade-point average is less than 2.0 will be issued a warning notice at the end of the semester and will be required to take corrective measures (e.g., limitations of course load to no more than 13 credit hours).

Probation

A student whose cumulative grade-point average is below 2.0 but above 1.0 after attempting a minimum of 24 credit hours is placed on probation. The course load of a student on probation may be no more than 13 credit hours. A student returns to good standing if, after a first or second semester on

probation, the cumulative grade-point average is raised to 2.0 or more.

Suspension

The following circumstances constitute grounds for suspension:

1. a cumulative grade-point average below 1.0 after attempting a minimum of 24 credit hours;
2. failure to attain a cumulative grade-point average of 2.0 or more after two successive full-time semesters (or 24 additional credit hours attempted) on probation. Suspension will take effect at the end of the second consecutive semester under 2.0 immediately following two semesters on probation.

Once suspended, students may not register for or complete any courses in any division at The George Washington University. Suspended students may apply for readmission following completion of the term of suspension. A suspended student seeking readmission cannot apply for readmission until he or she has been away from the University for at least one semester. To be considered for readmission, a student suspended for academic reason must complete at least 12 credit hours of course work in one semester at a four-year degree-granting institution and maintain at least a 3.0 grade-point average. A student suspended twice for poor scholarship will not be readmitted.

Timely Progress Toward the Degree

Students who fail to make adequate and timely progress toward the degree, through repeated leaves of absence or repeated failure to complete an appropriate number of credits per semester, may be dismissed from the University (see Right to Dismiss Students under University Regulations). Students dismissed on these grounds may apply for readmission after supplying sufficient evidence of academic promise.

Additionally, students must attain grades no lower than C- in required major field courses. If a student receives a grade of D+, D, or D- in a course specifically required for the major, the student will be required to repeat the course until a satisfactory grade (C- or better) is earned. Once the student has completed the course with a satisfactory grade, credit hours earned the first time the course was taken will count toward the minimum number of credit hours required for the major. Credit hours earned toward the repetition do not count toward the degree.

Incompletes

Conditions under which the symbol I (Incomplete) may be assigned are described under University Regulations. In GWSPH, the conditions for granting a notation of I should be documented by a written contract between the faculty member and the student.

Changing an Incomplete

Incomplete work must be completed as specified in the contract but no later than one calendar year from the last day of the examination period of the semester or summer session in which the symbol *I* was assigned. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the dean for additional time in which to complete the work of the course. Such petitions should be submitted within a year of the assignment of the symbol *I*. When work for the course is completed, the grade earned will be indicated in the form of *I*, followed by the grade. The indication of *I* cannot be removed from the transcript. An Incomplete that is not changed within this period automatically becomes an *IF*. The symbol *I* cannot be changed by reregistering for the course at the University or by taking its equivalent elsewhere.

Pass/No Pass Option

A junior or senior student in GWSPH who is in good standing may, with the approval of the instructor and the dean, take one course a semester for a grade of *P*, Pass, or *NP*, No Pass. No student will be allowed to take more than four pass/no pass courses under this regulation. The student may, however, also receive grades of *P/NP* in courses that are graded *P/NP* only. Courses required for the general education requirements or in the student's major or minor field (including those courses required for the major that are offered by other departments) may not be taken on the pass/no pass basis. A transfer student may not choose this option until the second semester of enrollment in the University. Under no circumstances may a student change from pass/no pass status to graded status, or vice versa, after the end of the eighth week of class.

GWSPH allows 3 credits toward the degree from lifestyle, sport, and physical activity courses. No more than 45 credit hours of courses completed by a student while in nondegree status may be applied toward a degree in Columbian College.

Academic Work Load

To encourage academic performance of high quality, the College limits the student's work load. After the freshman year, a full-time student who is not on probation may take a course load of up to 19 credit hours. The 18th and all subsequent hours require additional tuition charges. A full-time student who, during the immediately preceding semester, has received no grades below *B-* and has earned grades of *A* or *A-* in three courses totaling at least 9 credit hours may take up to 21 credits. Students may not register for more than 21 credits without approval of the dean.

Applying for Readmission to a Program

GWSPH undergraduate students who were previously registered in the University but who did not register during the immediately preceding semester (summer sessions excluded) are out of status and must apply for readmission by completing a GWSPH undergraduate admissions petition. Completing and submitting (to the GWSPH Office of Admissions) the petition

does not guarantee that the student will be readmitted. The respective program director is responsible for the readmission decision and can only readmit a student if there is no violation of other GWSPH or University policies. Students who have attended one or more academic institutions while absent from this University must have complete official transcripts from each institution attended sent directly to the GWSPH Office of Admissions. Applicants for readmission are considered on the basis of policies and program requirements currently in effect and if readmitted, will be subject to the policies and program requirements then in effect. The Admissions Petition can be found here at: <http://publichealth.gwu.edu/academics/forms>

International Students---Less than Full-Time Status

If you are an international student on an F-1 or J-1 Visa, it is your responsibility to enroll as a full time student (minimum 12 credit hours for undergraduate students) for spring and fall semesters according to the U.S. Immigration and Naturalization rules governing registration requirements for international students with F-1/J-1 visa status. In certain situations, a reduced course load may be allowed. To request approval for this, complete the *F-1/J-1 Request for Reduced Course Load Form* (download form at <http://gwired.gwu.edu/iso/CurrentStudents/formscopy/>) and submit it to the International Services Office (ISO). You can obtain more information from the ISO at (202) 994-4477.

Special Honors

In addition to meeting the general requirements stated under University Regulations, a candidate for graduation with Special Honors in exercise science must have a grade-point average of at least 3.5 in required courses in the major and at least a 3.25 average overall. The candidate must submit an honors paper in EXSC 4110 Current Issues in Exercise Science that is approved by at least two full-time faculty members.

Other GWSPH regulations governing undergraduate regulations are analogous to those of Columbian College of Arts and Sciences. See the section headed Columbian College of Arts and Sciences.

Independent Study Course Requirements

Independent study is designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. For instructions on registration and forms needs go to: <http://publichealth.gwu.edu/academics/forms>

Please note: Independent study projects may not be used as a substitute for an available required or elective course and may not cover substantially the same subject matter that is available in a required or elective course.

Preparation for Medical School

A student who plans to apply to medical school fulfills the general requirements of their program. Advice about academic preparation for medical school is provided by the health professions advisors in the Office of Undergraduate Studies (<http://columbian.gwu.edu/undergraduate/advising>). For admission to most medical schools, the student must earn a bachelor's degree that includes the following course work:

- Biology—8 credit hours of introductory biology, including laboratory. Students who receive credit for AP biology must complete 8 credit hours of upper-level biology course work, including laboratory.
- Chemistry—8 credit hours of general inorganic chemistry, including laboratory.
- Organic Chemistry—8 credit hours, including laboratory.
- Biochemistry—3 credit hours.
- Physics—8 credit hours, including laboratory.
- English—6 credit hours in the usual introductory English composition courses or their equivalents (fulfilled by the University Writing Program (<http://www.gwu.edu/%7Euwp>) at GW).

Many medical schools have additional entrance requirements, which may include courses in biochemistry, genetics, and mathematics; even when such courses are not required, they are strongly recommended. With the exception of the specified requirements, applicants are urged to follow their personal interests in developing their course of study.

Preparation for Law School

Because a liberal education is the best undergraduate preparation for law school, students are encouraged to use elective credit to broaden their curriculum. Advice about academic preparation for law school is provided by the pre-law advisor in the Office of Undergraduate Studies (<http://columbian.gwu.edu/undergraduate/advising>).

Graduation Requirements

While degrees are awarded at the end of each semester, formal commencement ceremonies occur only in May. You are eligible to graduate only after you have completed all degree requirements (see your advisor or Student Records) and have no financial obligations to the University. The degree designation (BS, MS, MPH, MHA, or DrPH, PhD) may be used after your name only when you have completed all of your degree requirements.

Graduate Regulations

Milken Institute School of Public Health provides an on-line Graduate Student Handbook (<http://publichealth.gwu.edu/pdf/Handbook.pdf>) that contains additional updated information on policies, regulations, and other matters of concern to enrolled or admitted students. It is the responsibility of the student to be aware of the information contained in both

this Bulletin and the Handbook. Students should also consult departmental handbooks and guidelines.

Enrollment Status

The University's continuous enrollment policy is very important. Once entered in a degree program, you are expected to be continuously registered for at least one credit during all fall and spring semesters and actively engaged in fulfilling the requirements for your degree.

- For fall and spring semester, you must register for one or more credit hours to maintain enrollment status.
- During the summer session, you do not have to be enrolled unless you are graduating during the summer; in this case, register for Continuous Enrollment (\$35).
- Some additional activities, such as Master's International qualify as continuous enrollment.

If you are a degree seeking student and find it necessary to interrupt active pursuit of your degree, you may petition to take a Leave of Absence for a specific period of time, limited to a total of one calendar year during the student's program. If you discontinue active enrollment in degree studies without being granted a leave of absence, or if you are granted a leave but do not return to active study at the close of the period of approved absence, you are no longer in status and you must apply for readmission and be subject to the regulations and program requirements then in effect. Please note: readmission to any program is a competitive process and not guaranteed.

Advising

Students partner with faculty advisors to successfully navigate their academic careers through conversations that range from exploring career interests to finding appropriate campus resources that connect students to a community in which they feel comfortable. Students are thereby empowered to take ownership of, and responsibility for, their educational experiences.

Students need to build a support system that ensures academic success. Professors, faculty advisors, professional advisors, tutors, and/or counselors should be part of that support system. GWSPH Career Center (<http://publichealth.gwu.edu/services/career-center>) and The Writing Center (<http://www.gwu.edu/%7Egwriter>) offers walk-in by-appointment assistance. Personal counseling is available through the office of the Dean of Student Affairs (<http://students.gwu.edu>), the Counseling Center (<http://counselingcenter.gwu.edu>), Disability Support Services (<http://gwired.gwu.edu/dss>), the Multicultural Student Services Center (<http://gwired.gwu.edu/mssc?url=mssc>), and the International Services Office (<http://internationalservices.gwu.edu>).

Academic Standing

A graduate student who is not suspended or on academic probation or on extended provisional admission status is

considered to be in good standing. At the graduate level, a minimum grade-point average of 3.0 (B) must be maintained and is required to be awarded a graduate degree. All courses taken for graduate credit after matriculation as a degree candidate (including those GWSPH courses transferred in from non-degree status, but excluding those audited or taken for the grade of CR or P/NP) will be used to calculate the grade-point average.

Provisional Admission

Graduate program applicants with credentials that are weaker than expected for graduate study, but who nonetheless show promise of successful graduate work, are occasionally granted provisional admission by the GWSPH Admissions Committee. While on provisional admission status, students are required to see their advisors each semester prior to registration. Provisionally admitted graduate students must demonstrate their ability to maintain a GPA of at least 3.0 in the first nine credit hours of coursework attempted, and during this time are not allowed to receive a grade of I or a grade lower than a B. Provisionally admitted students who meet these requirements are granted good standing. Provisionally admitted students who do not meet these requirements are subject to suspension (see below).

Semester Warning

A graduate student whose cumulative grade-point average is less than 3.0 after attempting a minimum of one credit hour and a maximum of eight credit hours will be issued a warning notice at the end of the semester and will be required to take corrective measures (e.g., meet with academic advisor to outline steps to raise GPA).

Probation

A graduate student whose grade-point average falls below 3.0 at any point after completing nine credit hours will be placed on probation. This probation extends through the period in which the student next attempts up to 12 credit hours of work, including prescribed courses. A student's program may be restricted by the program director if deemed necessary. During this period, the student's performance will be monitored to determine suitability for continued study. A student who fails to raise the cumulative grade-point average to 3.0 or better during the period of probation is subject to suspension. Incomplete grades and grades of B- or lower are not allowed during the probation period and are grounds for automatic suspension. A student who is subject to probation for a second time at any point during the program may be automatically suspended.

Grade of F

A graduate degree candidate who receives a grade of F is subject to suspension. If the student wishes to remain enrolled, s/he must present cause, for consideration by the dean and the director of his/her degree program, as to why continued study should be permitted. Once a grade of F is earned in a core, required, or elective course, it remains a part of the

student's permanent record and is calculated into the grade-point average. A graduate student given the grade of F in a core or other required course, and permitted to continue in graduate studies, must repeat the course and achieve at least the grade of B; such a repeat does not expunge the grade of F, which remains part of the student's record. Should this level of performance not be obtained, the student will be suspended from the degree program.

Suspension

A graduate student who receives an F or does not meet the conditions of probation (see above) is subject to suspension. Suspended students may not register for or complete any courses at The George Washington University. An outstanding Incomplete grade at the time of suspension will become an F.

The GWSPH Dean's Office, in consultation with the student's academic advisor, may continue a student on probation (in lieu of suspension) if satisfactory progress is demonstrated during the probationary period and sufficient evidence of academic promise, by way of a statement of appeal, is offered by the student.

A student who is suspended or withdraws under these conditions may apply for readmission after one semester. To be readmitted, the student must submit evidence that suggests the probability of academic success. A student who is readmitted will continue on academic probation and must achieve a minimum grade-point average of 3.5 in the next 12 credit hours of graduate study. Should the student fail to achieve this grade-point average, the student will again be suspended and will not be readmitted.

Timely Progress Toward the Degree

A graduate student who fails to make adequate and timely progress toward the degree, through repeated leaves or repeated failure to complete an appropriate number of credit hours per semester, may be suspended. Students suspended on these grounds may apply for readmission after supplying sufficient evidence of academic promise.

Summary of Academic Standing Policies for Graduate Students

- **Provisional Admission**- A student who receives a grade of I or grade of B- or lower while on provisional admission status is subject to suspension.
- **Semester Warning**---(< 9 credits completed) A student with a cumulative GPA less than 3.0 (with less than 9 credits completed) must take corrective action.
- **Academic Probation**---A student with cumulative GPA less than 3.0 (with 9 or more credits completed) is placed on academic probation. A student on academic probation who receives an unacceptable grade (B-, C, F, I, Z) or fails to raise cumulative GPA to 3.0 within the next 12 credits taken is subject to suspension.

- **Grade of F---**A student who receives a grade of F is subject to suspension. If student wishes to remain enrolled s/he must present cause as to why continued study should be permitted. If permitted to continue in graduate studies, student must repeat the course (if core or required) and achieve at least the grade of B.
- **Suspension---**A student who is suspended may not register for or complete any courses at GW. A student who is suspended or withdraws under these conditions may apply for readmission after one semester.

Incompletes and Changing an Incomplete (I)

Conditions under which an Incomplete (I) may be assigned and changed are described under *University Regulations, Grades* in both Bulletins. You must make an agreement in writing with your Instructor outlining how and when you will make up your incomplete. An Incomplete must be changed by a date agreed upon by you and your instructor, but no more than one calendar year from the end of the semester in which you took the course. The grade earned will be indicated in the form of I, followed by the grade. *An Incomplete that is not changed within this period will convert to an I/F (Incomplete/Failure) and your grade point average and academic standing recalculated.* In cases of well-documented extenuating circumstances, you and your instructor may file a joint petition to the director of your degree program and the Associate Dean for Academic Affairs for additional time in which to complete the course work. An "I" designation next to the final grade cannot be changed by reregistering for the course at GW or by taking its equivalent elsewhere and remains on your permanent record even after the course has been successfully or unsuccessfully completed.

In Progress (IP)

The grade In Progress (IPG) is given for all thesis, residency, advanced reading, independent study, culminating experience, practicum, and dissertation research courses until the coursework is completed. Upon the satisfactory completion, the grade is entered and IPG no longer remains on the transcript. Grades of In Progress may not be given for regular, semester-length courses.

Applying for Readmission to a Program

GWSPH graduate degree or certificate students who were previously registered in the University but who did not register during the immediately preceding semester (summer sessions excluded) are out of status and must apply for readmission by completing an admissions petition. Completing and submitting (to the GWSPH Admissions Office) the petition does not guarantee that the student will be readmitted. GWSPH departments are responsible for readmitting students and can only do so if the student is not in violation of other GWSPH or University policies. Students who have attended one or more academic institutions while absent from this University must have complete official transcripts from each institution

attended sent directly to the GWSPH Office of Admissions. Applicants for readmission are considered on the basis of policies and program requirements currently in effect and if readmitted, will be subject to the policies and program requirements then in effect. The Admissions Petition can be found here at: <http://publichealth.gwu.edu/academics/forms>

International Students---Less than Full-Time Status

If you are an international student on an F-1 or J-1 Visa, it is your responsibility to enroll as a full time student (minimum 9 credit hours for graduate students) for spring and fall semesters according to the U.S. Immigration and Naturalization rules governing registration requirements for international students with F-1/J-1 visa status. In certain situations, a reduced course load may be allowed. To request approval for this, complete the *F-1/J-1 Request for Reduced Course Load Form* (download form at <http://gwired.gwu.edu/iso/CurrentStudents/formscopy/>) and submit it to the International Services Office (ISO). You can obtain more information from the ISO at (202) 994-4477.

Independent Study Course Requirements

Independent study is designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. For instructions on registration and forms needs go to: <http://publichealth.gwu.edu/academics/forms>

Please note: Independent study projects may not be used as a substitute for an available required or elective course and may not cover substantially the same subject matter that is available in a required or elective course.

Graduation Requirements

While degrees are awarded at the end of each semester, formal commencement ceremonies occur only in May. You are eligible to graduate only after you have completed all degree requirements (see your advisor or Student Records) and have no financial obligations to the University. The degree designation (BS, MS, MPH, MHA, or DrPH, PhD) may be used after your name only when you have completed all of your degree requirements.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in exercise science (p. 220)
- Bachelor of Science with a major in exercise science, pre-athletic training/sports medicine concentration (p. 221)
- Bachelor of Science with a major in exercise science, pre-dietetics concentration (p. 222)
- Bachelor of Science with a major in exercise science, pre-medical professional concentration (p. 224)

- Bachelor of Science with a major in exercise science, pre-physical therapy concentration (p. 225)
- Bachelor of Science with a major in public health (p. 178)
- Combined Bachelor of Science in public health and Master of Public Health

Minors

- Minor in exercise science (p. 226)
- Minor in health and wellness
- Minor in nutrition
- Minor in public health

GRADUATE

Master of Public Health

- Master of Public Health in the field of biostatistics (p. 201)
- Master of Public Health in the field of community oriented primary care (p. 276)
- Master of Public Health in the field of environmental health science and policy (p. 192)
- Master of Public Health in the field of epidemiology
- Master of Public Health in the field of global environmental health (p. 194)
- Master of Public Health in the field of global health communication (p. 239)
- Master of Public Health in the field of global health program design, monitoring, and evaluation (p. 245)
- Master of Public Health in the field of global health policy (p. 248)
- Master of Public Health in the field of global health epidemiology (p. 242)
- Master of Public Health in the field of health policy (p. 255)
- Master of Public Health in the field of health promotion (p. 280)
- Master of Public Health in the field of maternal and child health (p. 282)
- Master of Public Health in the field of physical activity in public health (p. 227)
- Master of Public Health in the field of public health communication and marketing (p. 285)
- Master of Public Health in the field of public health management (p. 271)
- Master of Public Health in the field of public health nutrition (p. 229)
- Master of Public Health: MPH@GW (p. 184)

Master of Science

- Master of Science in the field of biostatistics (p. 206)
- Master of Science in the field of epidemiology
- Master of Science in the field of exercise science with a concentration in clinical exercise physiology (p. 232)

- Master of Science in the field of exercise science with a concentration in strength and conditioning (p. 234)
- Master of Science in the field of health policy
- Master of Science in the field of public health microbiology and emerging infectious diseases (p. 209)

Master of Health Administration

- Master of Health Administration (p. 267)
- Master of Health Administration - Online/Executive Program (p. 270)

Specialist program

- Health Services Administration Specialist (p. 273)

Joint/Dual programs

- Doctor of Medicine and Master of Public Health (p. 190)
- Juris Doctor/Master of Laws in the field of law and Master of Public Health (p. 191)
- Master of Arts in the field of international affairs and Master of Public Health (p. 186)
- Master of Health Administration with a certificate in healthcare corporate compliance (p. 186)
- Master of Public Health in the field of health policy with certificate in healthcare corporate compliance (p. 187)
- Master of Science in Health Policy with a certificate in healthcare corporate compliance (p. 187)
- Master of Science in Health Sciences in the field of physicians assistant and Master of Public Health (p. 188)
- Peace Corp Masters International Program and Master of Public Health

Doctoral programs

- Doctor of Public Health in the field of environmental and occupational health (p. 197)
- Doctor of Public Health in the field of global health (p. 251)
- Doctor of Public Health in the field of health behavior (p. 288)
- Doctor of Public Health in the field of health policy (p. 263)
- Doctor of Philosophy in the field of biostatistics (p. 211)
- Doctor of Philosophy in the field of epidemiology (p. 213)
- Doctor of Philosophy in the field of public policy and administration (health policy track) (p. 262)

CERTIFICATES

- Graduate certificate in health administration generalist (p. 274)
- Graduate certificate in long-term care
- Graduate certificate in (p. 261)health policy
- Graduate certificate in public health generalist (<http://bulletin.gwu.edu/public-health/public-health-generalist-certificate>)

UNDERGRADUATE PROGRAMS

Bachelor's programs

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- Minor in health and wellness
- Minor in nutrition
- Minor in public health

BACHELOR OF SCIENCE WITH A MAJOR IN PUBLIC HEALTH

Program Director S. Wilensky

Program Advisor C. Leake

The BS in Public Health, founded in the liberal arts tradition often associated with small, private colleges, is a respected and proven model for teaching students to assume responsibility for their own life-long learning. Liberal arts education has its foundation in both the arts (trivium, based on three disciplines: language, logic, and rhetoric) and the sciences (quadrivium, based on four disciplines of natural phenomena: arithmetic, geometry, astronomy, and music) as studied in medieval universities. While contemporary arts and sciences programs have expanded beyond the imagination and expectations of the medieval founders, it is within the context of this liberal arts tradition that the BS in Public Health strives to prepare students for progressive independence, maturity, knowledge of the world, understanding of diverse inhabitants, and respect for their differing points of view. Because this degree is intended to convey technical detail and analytic skills, but with a liberal arts philosophical base, it also has the educational objectives of nurturing critical thinking, analysis, and synthesis of information, and recognizing the historical and societal associations of current trends in public health and health care delivery.

The Bachelor of Science with a major in public health aims to increase understanding of public health principles for students who intend graduate study toward careers in law, medicine

or another health profession, or public health. The program is also available to students who plan to pursue entry-level jobs in sectors of public health or health services. With a liberal arts base, the program emphasizes technical detail and analytic skills, nurturing critical thinking and synthesis of information in recognizing historical and societal associations of trends in public health and health care delivery.

Students interested in the Bachelor of Science with a major in public health or the dual degree program consisting of the Bachelor of Science with a major in public health and the Master of Public Health, should consult SPH admission during the semester prior to completing 60 credits. Additional information can be found on the School's website (<http://publichealth.gwu.edu>).

COMPETENCIES

The following competencies are designed to be achieved by all public health majors through the indicated courses:

Upon completion of the Bachelor of Science with a major in Public Health, students will be able to:

- Assess the impact of historical, cultural, political, environmental, behavioral, and socioeconomic factors on population/community health and health status

Relevant courses:

PUBH 1101	Intro/Pub Health & Health Svcs
PUBH 1102	History of Public Health
PUBH 2111	Introduction to Preventive Medicine
PUBH 2112	Principles of Health Education and Health Promotion
PUBH 3132	Health and Environment
PUBH 3133	Global Health & Development
PUBH 3135W	Health Policy

- Describe the organization, financing, and delivery of health services and public health systems

Relevant courses:

PUBH 1101	Intro/Pub Health & Health Svcs
PUBH 3130	Health Services Management and Economics
PUBH 3133	Global Health & Development
PUBH 3135W	Health Policy
PUBH 4140W	Senior Seminar

- Describe the underlying scientific principles relating to public health and health care issues and discuss how these principles inform interventions to improve individual and population health

Relevant courses:

PUBH 1101	Intro/Pub Health & Health Svcs
PUBH 2112	Principles of Health Education and Health Promotion
PUBH 2110	Public Health Biology
PUBH 2111	Introduction to Preventive Medicine
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3132	Health and Environment
PUBH 3133	Global Health & Development
PUBH 4140W	Senior Seminar

- Critically review multiple types of research, develop an understanding of data and research, and develop and evaluate public health interventions based on available evidence

Relevant courses:

PUBH 2111	Introduction to Preventive Medicine
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3133	Global Health & Development
PUBH 4140W	Senior Seminar

- Evaluate policy, behavioral, environmental, and systems options for addressing current public health and health care concerns

Relevant courses:

PUBH 2112	Principles of Health Education and Health Promotion
PUBH 3130	Health Services Management and Economics
PUBH 3132	Health and Environment
PUBH 3133	Global Health & Development
PUBH 3135W	Health Policy
PUBH 4140W	Senior Seminar

- Prepare written and oral communication to convey public health concepts and analysis clearly and persuasively (all courses relevant).
- Use an interdisciplinary approach to develop and evaluate public-health research interventions based on current evidence

Relevant course:

PUBH 4140	Senior Seminar
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REQUIREMENTS

Students may apply to enter the 120-credit-hour public health major during the semester prior to completing 60 credits. Applicants should have a minimum grade point average of 3.0.

The following requirements must be fulfilled:

General education requirements listed under Columbian College of Arts and Sciences with exceptions listed on the general education tab

Requirements in other areas:

Either BISC 1005 The Biology of Nutrition and Health
BISC 1111 Introductory Biology: Cells and Molecules or equivalent (with approval from the PUBH 2110 Public Health Biology instructor) as a prerequisite to PUBH 2110 Public Health Biology

One semester of statistics (STAT 1127 Statistics for the Biological Sciences is preferred) as a prerequisite to PUBH 3131 Epidemiology: Measuring Health and Disease

ECON 1011 Principles of Economics I or equivalent (with approval from the PUBH 3130 Health Services Management and Economics instructor) as a prerequisite for PUBH 3130 Health Services Management and Economics

Requirements for the major:

33 credits of public health core courses

PUBH 1101	Intro/Pub Health & Health Svcs
PUBH 1102	History of Public Health
PUBH 2110	Public Health Biology
PUBH 2111	Introduction to Preventive Medicine
PUBH 2112	Principles of Health Education and Health Promotion
PUBH 3130	Health Services Management and Economics
PUBH 3131	Epidemiology: Measuring Health and Disease

PUBH 3132	Health and Environment
PUBH 3133	Global Health & Development
PUBH 3135W	Health Policy
PUBH 4140W	Senior Seminar
9 credits of approved elective courses from the following:	
HLWL 1101	Special Topics (Sleep and Health)
HLWL 1103	Issues in Men's Health
HLWL 1104	Outdoor and Environmental Education
HLWL 1106	Drug Awareness
HLWL 1109	Human Sexuality
HLWL 1110	Issues in Alternative Medicine
EXSC 1118	Sport and Nutrition
EXSC 2119	Basic Nutrition
HIST 3363	Race, Medicine & Public Health
ANTH 3504	Illness, Healing, and Culture
ANTH 3513	Anthropology of Human Rights
ANTH 6302	Issues in Development
BIOC 3560	Diet, Health, and Longevity
GEOG 2137	Environmental Hazards
HSCI 2101	Psychosocial Aspects of Health and Illness
ORSC 4161	Research Methods in Organizational Sciences
PSC 2101	Scope and Methods of Political Science
PSYC 2101	Research Methods-Psychology
PUBH 2113	Impact of Culture upon Health
PUBH 2114	Environment, Health, and Development
PUBH 2115	Health, Human Rights, and Displaced Persons
PUBH 2116	Global Delivery of Health Systems
PUBH 2117	Service-Learning in Public Health
PUBH 3136	Health Law
PUBH 3137	Global Public Health Nutrition
PUBH 3150	Sustainable Energy & Env Hlth

PUBH 3151 Current Issues in Bioethics

PUBH 3190 Topics in Public Health (TOPICS: Current Issues in Bioethics)

Students may not take required courses outside of GW except with permission from the Director of the Undergraduate Program in Public Health. Permission will only be granted if there are strong extenuating circumstances that call for an exception to this policy.

Comply with policies and procedures as outlined in the University and SPH requirements. Pay particular attention to the SPH requirements to complete human research training, to complete 8 hours of professional enhancement activities, and to pass the Academic Integrity Quiz

GENERAL EDUCATION

The general education curriculum of Columbian College (<https://advising.columbian.gwu.edu/g-pac>) engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that meaningfully enhance their analytical skills, that develop communication competencies, and that invite them to participate as responsible citizens, attentive to issues of culture, diversity, and privilege.

Course work for the general education curriculum includes 24 credits of approved analytic courses in quantitative and scientific reasoning and in critical and creative thinking. Students engage diverse viewpoints by incorporating 3 credits of courses into that program that include global or cross-cultural perspectives and 3 credits that include local/civic engagement. Students must also demonstrate written and oral communication skills through 13 credits of approved course work.

The general education curriculum is a "living curriculum" and therefore will change from year to year. Courses added to the curriculum are generally available to students immediately after being approved; some are phased in as deemed appropriate. As such, it is essential that students consult with their professional academic advisors. The basic distribution of the curriculum follows.

Analysis—3 credits in mathematics or statistics (quantitative reasoning); 6 credits in natural and/or physical laboratory sciences (scientific reasoning); 6 credits in social sciences (quantitative, scientific, critical, or creative thinking); 6 credits in humanities (critical or creative thinking); 3 credits in art: visual, performing, critical, or historical practices (critical or creative thinking).

Perspective—3 credits that include a global or cross-cultural perspective; 3 credits that include local/civic engagement

Communication—4 credits in UW 1020 University Writing; 2 Writing in the Disciplines (WID) courses; 3 credits in oral

communication. Note: UW 1020 University Writing must be taken before enrolling in the WID courses, and the WID courses must be taken in separate semesters. One of the two WID courses may double count toward the Analysis and/or Perspective course work. The oral communication course may count toward the Analysis and/or Perspective requirements, or it may be met through major requirements.

Courses taken to fulfill any of the general education requirements may also be counted toward the major. With some exceptions made for transfer students, courses fulfilling these requirements must be completed in residence at the University. A full list of approved courses is maintained by the Office of Undergraduate Studies. (<http://columbian.gwu.edu/undergraduate/advising/gpac>)

COMBINED BACHELOR OF SCIENCE IN PUBLIC HEALTH AND MASTER OF PUBLIC HEALTH

Program Director S. Wilensky

Program Advisor C. Leake

The Milken Institute School of Public Health (SPH) offers a unique opportunity to a select group of students who not only demonstrate academic excellence, but also demonstrate a strong commitment to public health. The Milken Institute SPH will accept a small number of outstanding students each year to the BS/MPH program. Applicants may apply to any of the MPH programs, except Public Health Management. As incentives to move beyond the traditional undergraduate curriculum SPH offers participants admission to the MPH program without having to sit for the Graduate Record Examination (GRE) and the opportunity to complete both the BS and MPH degrees more efficiently than had the degrees been completed separately. This dual degree program strives to graduate public health leaders who are committed to improving the health and well-being of our local, national, and international communities and to life-long learning. This is an appropriate program for pre-professional students who are interested in public health issues.

The BS/MPH program is a multi-level, dual-degree program, meaning that students are concurrently enrolled in one undergraduate program and one graduate program and degrees will be awarded in different semesters.

REQUIREMENTS

Credit Distribution Chart

Category	Non Premed Credits	Premedical Credits
BS general curriculum requirements	28-34	52-71

BS Public health core course requirements (BS Program = 21) (Includes 9 graduate crossover credits)	30	30
BS SPH electives	9	9
BS additional electives	47-54	10-29
BS total credits	120	120
MPH total credits (Includes 9 graduate crossover credits)	45	45
Total remaining MPH credits (45 credits minus 9 credits = 36 credits)	36	36
BS/MPH total credits (120 credits plus 36 credits = 156 total credits)	156	156

Public health core requirements and graduate substitutions

Undergraduate core courses:	
PUBH 1101	Intro/Pub Health & Health Svcs
PUBH 2111	Introduction to Preventive Medicine
PUBH 1102	History of Public Health
PUBH 3130	Health Services Management and Economics
PUBH 3133	Global Health & Development
PUBH 3135W	Health Policy
PUBH 4140W	Senior Seminar
Graduate crossover credits	
PUBH 6007	Social&BehaviorAppr-Pub.Hlth (Replaces PubH 2112 Principles of Health Education and Health Promotion [3 credits] in the BS Public Health Program)
PUBH 6003	Prin & Practice/Epidemiology (Replaces PubH 3131 Epidemiology: Measuring Health and Disease [3 credits] in the BS Public Health Program)
PUBH 6004	Env/Occ Hlth-Sustainable World (Replaces PubH 3132 Health and Environment [3 credits] in the BS Public Health Program)

PUBH 6001	Biological Concepts/Public Hlth (Replaces PubH 2110 Public Health Biology [3 credits] in the BS Public Health Program)
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Public health elective courses

HLWL 1101	Special Topics (Sleep and Health)
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HLWL 1103	Issues in Men's Health
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HLWL 1104	Outdoor and Environmental Education
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HLWL 1106	Drug Awareness
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HLWL 1109	Human Sexuality
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HLWL 1110	Issues in Alternative Medicine
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EXSC 1118	Sport and Nutrition
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EXSC 2119	Basic Nutrition
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HIST 3363	Race, Medicine & Public Health
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ANTH 3504	Illness, Healing, and Culture
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ANTH 3513	Anthropology of Human Rights
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ANTH 6302	Issues in Development
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BIOC 3560	Diet, Health, and Longevity
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GEOG 2137	Environmental Hazards
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HSCI 2101	Psychosocial Aspects of Health and Illness
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ORSC 4161	Research Methods in Organizational Sciences
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PSC 2101	Scope and Methods of Political Science
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PSYC 2101	Research Methods-Psychology
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PUBH 2113	Impact of Culture upon Health
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PUBH 2114	Environment, Health, and Development
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PUBH 2115	Health, Human Rights, and Displaced Persons
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PUBH 2116	Global Delivery of Health Systems
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PUBH 2117	Service-Learning in Public Health
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PUBH 3136	Health Law
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PUBH 3137	Global Public Health Nutrition
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PUBH 3150	Sustainable Energy & Env Hlth
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PUBH 3151	Current Issues in Bioethics
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PUBH 3190	Topics in Public Health (TOPICS: Current Issues in Bioethics)
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Master of Public Health required core course

PUBH 6001	Biological Concepts/Public Hlth (Replaces PubH 2110 Public Health Biology (3 credits).) (Summer, Fall, Spring)
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PUBH 6002	Biostatistical Applic for PubH (Summer, Fall, Spring)
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PUBH 6003	Prin & Practice/Epidemiology (Replaces PubH 3131 Epidemiology: Measuring Health and Disease (3 credits) in the BS Public Health Program.) (Summer, Fall, Spring)
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PUBH 6004	Env/Occ Hlth-Sustainable World (Replaces PubH 3132 Health and Environment (3 credits) in the BS Public Health Program.) (Summer, Fall, Spring)
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PUBH 6006	Mgt & Policy Approaches to PH (Summer, Fall, Spring)
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PUBH 6007	Social & Behavior Appr-Pub.Hlth (Replaces PubH 2112 Principles of Health Education and Health Promotion (3 credits) in the BS Public Health Program). (Fall, Spring, Summer)
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Refer to the relevant MPH program for your program-specific graduate requirements.

Graduation Requirements:

1. Graduate credit requirement: 156 undergraduate and graduate credits
2. Course requirements: Successful completion of the undergraduate degree, graduate core courses, and program-specific courses
3. Grade point average requirement: A 3.0 (B average) overall grade point average is required for graduate course
4. Time limit requirement: Degrees must be completed within six years of the date accepted to the program
5. Transfer credit policy: In concordance with undergraduate and graduate established policies

Comply with policies and procedures as outlined in the University and SPH requirements. Pay particular attention to the SPH requirements to complete human research training, to complete 8 hours of professional enhancement activities, and to pass the Academic Integrity Quiz

GENERAL EDUCATION

The BS, Public Health in the Milken Institute SPH follows the Columbian College general education requirements as follows:

The general education curriculum of Columbian College (<https://advising.columbian.gwu.edu/g-pac>) engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that meaningfully enhance their analytical skills, that develop communication competencies, and that invite them to participate as responsible citizens, attentive to issues of culture, diversity, and privilege.

Course work for the general education curriculum includes 24 credits of approved analytic courses in quantitative and scientific reasoning and in critical and creative thinking. Students engage diverse viewpoints by incorporating 3 credits of courses into that program that include global or cross-cultural perspectives and 3 credits that include local/civic engagement. Students must also demonstrate written and oral communication skills through 13 credits of approved course work.

The general education curriculum is a “living curriculum” and therefore will change from year to year. Courses added to the curriculum are generally available to students immediately after being approved; some are phased in as deemed appropriate. As such, it is essential that students consult with their professional academic advisors. The basic distribution of the curriculum follows.

Analysis—3 credits in mathematics or statistics (quantitative reasoning); 6 credits in natural and/or physical laboratory sciences (scientific reasoning); 6 credits in social sciences (quantitative, scientific, critical, or creative thinking); 6 credits in humanities (critical or creative thinking); 3 credits in art: visual, performing, critical, or historical practices (critical or creative thinking).

Perspective—3 credits that include a global or cross-cultural perspective; 3 credits that include local/civic engagement

Communication—4 credits in UW 1020 University Writing; 2 Writing in the Disciplines (WID) courses; 3 credits in oral communication. Note: UW 1020 University Writing must be taken before enrolling in the WID courses, and the WID courses must be taken in separate semesters. One of the two WID courses may double count toward the Analysis and/or Perspective course work. The oral communication course may count toward the Analysis and/or Perspective requirements, or it may be met through major requirements.

Courses taken to fulfill any of the general education requirements may also be counted toward the major. With some exceptions made for transfer students, courses fulfilling these requirements must be completed in residence at the University. A full list of approved courses is maintained by the

Office of Undergraduate Studies. (<http://columbian.gwu.edu/undergraduate/advising/gpac>)

MINOR IN PUBLIC HEALTH

Program Director S. Wilensky

Advisor C. Leake

Required Courses (9 credits)

PUBH 1101	Intro/Pub Health & Health Svcs
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3133	Global Health & Development *

Selective (3 credits)

One of the following (The other course may be used to partially fulfill the Elective Public Health courses):

PUBH 2110	Public Health Biology
PUBH 2111	Introduction to Preventive Medicine

Elective Courses (6 credits)

Two of the following (PUBH 2110 or PUBH 2111 may be used as an elective, if not taken to fulfill the selective requirement):

PUBH 1102	History of Public Health
PUBH 2110	Public Health Biology
PUBH 2111	Introduction to Preventive Medicine
PUBH 2112	Principles of Health Education and Health Promotion
PUBH 2113	Impact of Culture upon Health
PUBH 2114	Environment, Health, and Development
PUBH 2115	Health, Human Rights, and Displaced Persons
PUBH 2116	Global Delivery of Health Systems
PUBH 2117	Service-Learning in Public Health
PUBH 3130	Health Services Management and Economics
PUBH 3132	Health and Environment
PUBH 3135W	Health Policy
PUBH 3136	Health Law
PUBH 3190	Topics in Public Health

UNDERGRADUATE PROGRAMS

Bachelor's programs

- Bachelor of Science with a major in exercise science (p. 220)
- Bachelor of Science with a major in exercise science, pre-athletic training/sports medicine concentration (p. 221)
- Bachelor of Science with a major in exercise science, pre-dietetics concentration (p. 222)
- Bachelor of Science with a major in exercise science, pre-medical professional concentration (p. 224)
- Bachelor of Science with a major in exercise science, pre-physical therapy concentration (p. 225)
- Bachelor of Science with a major in public health (p. 178)
- Combined Bachelor of Science in public health and Master of Public Health

Minors

- Minor in exercise science (p. 226)
- Minor in health and wellness
- Minor in nutrition
- Minor in public health

MASTER OF PUBLIC HEALTH: MPH@GW

Program Director W. D. Evans

Program Description

This new distance education track for our Master of Public Health degree will emphasize local, national and global health practice. The program emphasizes interdisciplinary teaching, and will focus on core competencies/skills, and use cases/other materials from both the U.S. and abroad. The pedagogy will allow students to tailor their education to community level, national, or global interests in the U.S. and countries around the world, emphasizing interdisciplinary public health competencies, including biostatistics and epidemiology; cultural competency; health communication; leadership; professionalism; planning, implementation and evaluation methods; public health biology; and systems thinking.

Mission

Provide a practice-oriented MPH curriculum that enables our graduates to be leaders in the design of population and community health programs in the US and globally.

Please refer to the website (<http://publichealthonline.gwu.edu>) for more information.

COMPETENCIES

Program-Specific Competencies

Upon completion of the program, students should possess the following functional competencies.

- Describe biological mechanisms of major diseases causing death and disability in the US and globally from a public health perspective.

Relevant course:

PUBH 6001	BiologicalConcepts/PublicHlth
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- Define communities and identify and assess relevant population health needs.

Relevant courses:

PUBH 6007	Social&BehaviorAppr-Pub.Hlth
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PUBH 6500	Planning and Implementing Health Promotion Programs
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- Assess the functions, capacities, management and governance of governmental, international and non-state organizations that comprise health systems. Translate scientific and program evidence to inform the development of public health programs and policies within the context of health systems.

Relevant courses:

PUBH 6006	Mgt & Policy Approaches to PH
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PUBH 6442	Comparative Global Health Systems
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- Apply public health theory and experiential evidence to develop and manage project, program and institutional strategies to reduce community and individual health risks to mitigate the impact of disease.

Relevant courses:

PUBH 6007	Social&BehaviorAppr-Pub.Hlth
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PUBH 6503	Intro to PubHlth Commcnctn&Mktg
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- Conduct core program evaluations and complete an assessment of program outcomes, achievements, impacts and shortcomings. Communicate findings to stakeholders.

Relevant courses:

PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
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PUBH 6437	Case Study Methods for Global Health Evaluation
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- Apply relevant qualitative and quantitative tools and concepts to inform policy analyses for different audiences and topics.

Relevant courses:

PUBH 6002 Biostatistical Applic for PubH

PUBH 6003 Prin & Practice/Epidemiology

PUBH 6502 Practical Data Analysis: PCH

- Develop concise written and oral policy analyses for different audiences; identify the key strategies required to protect and advance health.

Relevant course:

PUBH 6006 Mgt & Policy Approaches to PH

- Describe how health systems performance is affected by various approaches to health care organization, health law, health workforce development and health care financing.

Relevant courses:

HSML 6202 Intro/Health Services Delivery

PUBH 6442 Comparative Global Health Systems

- Develop knowledge and skills in fundamentals of environmental health including the connection between population health and exposures to chemical, physical, and biological agents in the environment.

Relevant course:

PUBH 6004 Env/Occ Hlth-Sustainable World

- Develop communication campaigns and strategies to disseminate health promotion information through media channels.

Relevant course:

PUBH 6503 Intro to PubHlth Commnctn&Mktg

REQUIREMENTS

Course Requirements

All MPH students who select the distance education track (MPH@GW) enroll in Core Courses (15 credits), Program-Specific Courses (16 credits), and Electives (10 credits). The total 45 credit degree program also includes a Practicum (2 credits) and a Culminating Experience (2 credits) where students apply their didactic education in a real world setting.

Note that the MPH@GW track will be taught in 10 week quarters across the calendar year (4 quarters per year). Each course will be designed to deliver the required credit hours within the 10 week quarter format, with existing courses being formatted to meet this requirement.

Please refer to the MPH@GW website (<http://publichealthonline.gwu.edu>) for more information.

Program Requirements

Students will begin by taking the core MPH courses.

Required core courses:

PUBH 6001 BiologicalConcepts/PublicHlth

PUBH 6002 Biostatistical Applic for PubH

PUBH 6003 Prin & Practice/Epidemiology

PUBH 6004 Env/Occ Hlth-Sustainable World

PUBH 6006 Mgt & Policy Approaches to PH

PUBH 6007 Social&BehaviorAppr-Pub.Hlth

Required program specific courses:

PUBH 6500 Planning and Implementing Health Promotion Programs

HSML 6202 Intro/Health Services Delivery

PUBH 6442 Comparative Global Health Systems

PUBH 6437 Case Study Methods for Global Health Evaluation

PUBH 6430 Theories for Global Health Communication Interventions

PUBH 6532 Commnty Org,Devlpmnt&Advocacy

PUBH 6412 Global Health Quantitative Research Methods

Elective credits:

SPH elective courses (10 credits)

Visit the MPH@GW website for an updated list of electives

Practicum and culminating experience courses:

PUBH 6014 Practicum (professionals already working in public health may substitute an elective)

PUBH 6015 Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS AND MASTER OF PUBLIC HEALTH

SPH Program Coordinator E. Uretsky

The George Washington University Elliott School of International Affairs and Milken Institute SPH collaborate in offering a dual degree program leading to a Master of Public Health (MPH) and the Master of Arts (MA) from the following academic programs

MA/MPH Area of Combined Study

- Milken Institute School of Public Health
Master of Public Health (MPH)
 - Global Health Communication
 - Global Health Program Design, Monitoring and Evaluation
 - Global Health Policy
- Elliott School of International Affairs
Master of Arts (MA)
 - Asian Studies
 - European and Eurasian Studies
 - International Affairs
 - International Development Studies
 - Latin American & Hemispheric Studies

The dual MA/MPH degree requires a total of 67 credits to complete. Students electing Global Health as their Elliott School Master of Arts Major Field can use the 12 major field credits (taken in the Department of Global Health) to fulfill both the MA and MPH. Six additional credits of coursework in the Elliott School may also be applied toward the MPH as electives.

Students applying to the MA/MPH program must submit application materials to both the Elliott School of International Affairs and the Milken Institute SPH and be accepted by both schools. A full-time student (taking about 10 credits

per semester) may be able to complete both degrees within three years by attending summer sessions. Students accepted into the dual degree program may complete each degree separately.

REQUIREMENTS

Curriculum

The requirements for each program are found in the program information on the Milken Institute SPH (<http://publichealth.gwu.edu/academics>) website and Elliott School of International Affairs (<http://elliott.gwu.edu/graduate-programs>) website.

Dual Degree Rules and Regulations

Students in the dual degree program must fulfill the requirements of both degrees. Students are expected to work with program directors or advisors in each School to insure that all requirements are completed. Approval by program directors or advisors in both Schools is required for any overlap courses designated as meeting the requirements of both degree programs.

Graduation

Students completing the requirements of one degree program may apply to graduate with that degree prior to completing the second degree. Students may also formally request withdrawal from either program at any time to pursue a single degree in the other program. All work on each degree must be completed within five years from the student's entry into that degree program.

MASTER OF HEALTH ADMINISTRATION WITH A CERTIFICATE IN HEALTHCARE CORPORATE COMPLIANCE

Program Director Jane Thorpe

Given the dramatic changes in healthcare policy and regulation over the past decade, the position of corporate compliance officer has become increasingly important in the healthcare industry. No other position can have so profound an impact on your healthcare organization's success—or failure. Legislation such as the Health Insurance Portability and Accountability Act (HIPAA) and the federal Anti-Kickback and Stark Laws has created the need for university-based credentials for this increasingly specialized—and increasingly complicated—field.

GW's College of Professional Studies (CPS) offers a one-of-a-kind program providing a comprehensive corporate compliance education. Drawing from both GW's Department of Health Policy in the Milken Institute School of Public Health and a leading healthcare law firm in Washington, DC, the program offers education in healthcare laws and regulations as well as

tools and strategies for creating effective corporate compliance programs.

REQUIREMENTS

Program Requirements

Designed for working professionals, the 12-credit Graduate Certificate in Healthcare Corporate Compliance (GW HCC Program or Program) provides students with a uniquely comprehensive education in healthcare corporate compliance. The Program is designed for current or aspiring corporate compliance officers and other working in compliance-related fields. The course of study, offered in just over seven months, is divided into three segments: Five-day, In-classroom Residency at GW's Graduate Education Center in Alexandria, VA (three credits); Six-month, Online Distance Learning segment (six credits); and Three-day, In-classroom Capstone back in Alexandria, VA (three credits).

The Graduate Certificate in Healthcare Corporate Compliance can be awarded in conjunction with a Master of Health Administration (MHA). The 12 credits earned through the Graduate Certificate in Healthcare Corporate Compliance may be applied as electives in this program.

All other degree requirements for the MHA Master's program must be fulfilled as noted on the MHA program page (p. 267).

College of Professional Studies

The Graduate Certificate in Healthcare Corporate Compliance is awarded through the GW College of Professional Studies. Visit the CPS website (<http://bulletin.gwu.edu/public-health/mha-corporate-compliance-certificate/%20http://cps.gwu.edu/healthcare-compliance>) for more information.

MASTER OF PUBLIC HEALTH IN THE FIELD OF HEALTH POLICY WITH A CERTIFICATE IN CORPORATE COMPLIANCE

Program Director Jane Thorpe

Given the dramatic changes in healthcare policy and regulation over the past decade, the position of corporate compliance officer has become increasingly important in the healthcare industry. No other position can have so profound an impact on your healthcare organization's success—or failure. Legislation such as the Health Insurance Portability and Accountability Act (HIPAA) and the federal Anti-Kickback and Stark Laws has created the need for university-based credentials for this increasingly specialized—and increasingly complicated—field.

GW's College of Professional Studies (CPS) offers a one-of-a-kind program providing a comprehensive corporate compliance education. Drawing from both GW's Department of

Health Policy in the Milken Institute School of Public Health and a leading healthcare law firm in Washington, DC, the program offers education in healthcare laws and regulations as well as tools and strategies for creating effective corporate compliance programs.

REQUIREMENTS

Program Requirements

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The Graduate Certificate in Healthcare Corporate Compliance can be awarded in conjunction with a Master of Public Health in the field of health policy. The 12 credits earned through the Graduate Certificate in Healthcare Corporate Compliance may be applied toward this MPH. 3 credits earned in the Graduate Certificate can be applied to the Program-Specific courses and 9 credits to the electives.

All other degree requirements for the MPH program must be fulfilled as noted on the MPH in the field of health policy program page (p. 255).

College of Professional Studies

The Graduate Certificate in Healthcare Corporate Compliance is awarded through the GW College of Professional Studies. Visit the CPS website (<http://bulletin.gwu.edu/public-health/mpc-corporate-compliance-certificate/%20http://cps.gwu.edu/healthcare-compliance>) for more information.

MASTER OF SCIENCE IN HEALTH POLICY WITH A CERTIFICATE IN HEALTHCARE CORPORATE COMPLIANCE

Program Director Jane Thorpe

Given the dramatic changes in healthcare policy and regulation over the past decade, the position of corporate compliance officer has become increasingly important in the healthcare industry. No other position can have so profound an impact on your healthcare organization's success—or failure. Legislation such as the Health Insurance Portability and Accountability Act (HIPAA) and the federal Anti-Kickback and Stark Laws

has created the need for university-based credentials for this increasingly specialized—and increasingly complicated—field.

GW's College of Professional Studies (CPS) offers a one-of-a-kind program providing a comprehensive corporate compliance education. Drawing from both GW's Department of Health Policy in the Milken Institute School of Public Health and a leading healthcare law firm in Washington, DC, the program offers education in healthcare laws and regulations as well as tools and strategies for creating effective corporate compliance programs.

REQUIREMENTS

Program Requirements

Designed for working professionals, the 12-credit Graduate Certificate in Healthcare Corporate Compliance (GW HCC Program or Program) provides students with a uniquely comprehensive education in healthcare corporate compliance. The Program is designed for current or aspiring corporate compliance officers and other working in compliance-related fields. The course of study, offered in just over seven months, is divided into three segments: Five-day, In-classroom Residency at GW's Graduate Education Center in Alexandria, VA (three credits); Six-month, Online Distance Learning segment (six credits); and Three-day, In-classroom Capstone back in Alexandria, VA (three credits).

The Graduate Certificate in Healthcare Corporate Compliance can be awarded in conjunction with a Master of Science in the field of health policy. The 12 credits earned through the Graduate Certificate in Healthcare Corporate Compliance may be applied as electives in this program.

All other degree requirements for the Master of Science in the field of health policy program must be fulfilled as noted on the MS in the field of health policy program page (p. 260).

College of Professional Studies

The Graduate Certificate in Healthcare Corporate Compliance is awarded through the GW College of Professional Studies. Visit the CPS website (<http://bulletin.gwu.edu/public-health/ms-health-policy-corporate-compliance-certificate/%20http://cps.gwu.edu/healthcare-compliance>) for more information.

M.S.H.S IN THE FIELD OF PHYSICIANS ASSISTANT AND M.P.H.

Program Director J. Cawley

Mission Statement

As the US health care system continues to evolve, market forces and changing personnel requirements create new and expanding roles for health care professionals. The joint Physician Assistant – Master of Science in Health Sciences (MSHS)/Master of Public Health (MPH) Program at The George

Washington University strives to fill the need for a new type of health care professional; one who has both the depth of medical knowledge and the range of leadership and policy skills to meet the challenges of future practice. Based in both the Milken Institute School of Public Health (SPH) Department of Prevention and Community Health, and the School of Medicine and Health Sciences (SMHS) the PA/MPH Program presents a graduate curriculum that blends two important traditional paradigms of health care – the biomedical and the preventive. Health care professionals in the future US health system must be prepared as competent and caring clinicians, as well as bring a broad view of population health and prevention to their work. Graduates of the GWU PA/MPH Program will be leaders in clinical practice in primary care and preventive medicine as well have preparation to assume high level positions in education, research, and policy.

Goals

The PA-MSHS /MPH, provides the opportunity for students to obtain the competencies necessary to succeed in the rapidly evolving American and global health systems.

The major goals of the GWU PA/PH Program are to:

- Recruit diverse and intellectually curious students and develop in them a strong clinical medical and prevention knowledge base necessary to deliver the highest quality patient-centered healthcare in a variety of clinical settings worldwide.
- Educate future health care professionals who are competent clinicians who can bring a population health orientation to their practice setting.
- Develop practitioners for the future who integrate concepts of prevention, community-oriented primary care, and population health.
- Graduate collaborative clinicians who will serve the healthcare needs of a worldwide community with intelligence, compassion and integrity.
- Foster analytic thinking skills such that graduates will be able to perform a wide range of clinical tasks working with physicians, as well as assessing community health problems and addressing population health needs.
- Nurture a sensitivity and respect for the cultural and personal beliefs of all patients and an understanding of how social, economic, and other system forces can impact health and healthcare and how these impact patient morbidity and mortality.
- Encourage graduates to be responsive to the needs of patients and society and advocate for quality patient care regardless of patient population.
- Graduate practitioners who will have the information technology and research skills necessary to access and interpret the medical literature and support their ongoing professional development.

- Expect graduates to practice collaboratively, professionally, legally, ethically, and with integrity.

The PA/MPH program draws from a faculty in both the School of Medicine and Health Sciences and the Milken Institute SPH to provide instruction in a wide range of subjects in medicine, public health, and professional leadership.

The purpose of the MSHS(PA)/MPH Program is to provide future clinicians with a wide range of skills in leadership, policy development, and community and preventive medicine. Students in the Program prepare as clinicians fulfilling all of the requirements for national certification as a physician assistant (PA) in the GW Physician Assistant Program. In addition, public health coursework provides an orientation to population and community health. For example, in the Community Oriented Primary Care (COPC) track, students acquire skills in community health assessment, community based interventions, and the application of COPC principles in community based practice settings. GW's SPH, coursework in health care administration, management, and health care economics prepares students to be leaders in a wide variety of clinical settings, office practices, outpatient clinics, community-based health centers, and health care institutions. Students are also exposed to the formulation of health policy.

Set in the center of the health policy in the nation, the PA/MPH Program affords students the chance to interact with individuals in both the public and private sector who are involved in policy research, practice, and legislation.

The MPH program information can be found online here (<https://publichealth.gwu.edu/academics>).

The PA program information can be found online here (<http://smhs.gwu.edu/pas/program>).

Admissions Requirements

If you are interested in the joint PA/MPH Program you will be receiving correspondence from both the School of Medicine and Health Sciences (PA) and the Milken Institute SPH and Health Services (MPH) regarding the completion of your application and admissions decisions. Should you be accepted to one degree program and not the other, you may accept the admissions offer from the program to which you were accepted, because decisions are made separately.

1. Submit the PA Application (CASPA and PA Secondary Application) according to the instructions on the website (<http://smhs.gwu.edu/pas/program/prospective-students/admissions>).
2. You should submit the PA Secondary Application within two weeks of submitting the CASPA.
3. October 1 is the deadline for complete applications to include GRE score receipt.

The PA School, to save you time and money, will copy your application materials and send them to the Admissions department in the Milken Institute SPH. Do not complete the SOPHAS application or the SPH secondary application, as this will delay the processing of your application and result in your accruing increased application fees.

REQUIREMENTS

Curriculum Overview

Students in The George Washington University PA-MSHS/MPH Program fulfill the requirements of both programs totaling 122 credits over 9 semesters (82 required credits for the PA-MSHS program and 40 required credits for the MPH COPC program), with the remaining degree requirements fulfilled through cross-crediting.

For more information please go to the Milken Institute SPH website (<http://publichealth.gwu.edu/programs/joint-pamph>) and the SMHS website for the PA program. (<http://smhs.gwu.edu/pas/program>)

PEACE CORP MASTERS INTERNATIONAL PROGRAM AND MASTER OF PUBLIC HEALTH

Program Contacts Milken Institute School of Public Health, Office of Recruitment and Admissions (asksphhs@gwu.edu)

As one of 54 institutions in the country offering this prestigious program, The Milken Institute School of Public Health is proud to collaborate with the United States Peace Corps in this academic partnership. The Peace Corps has identified a shortage of prepared public health professionals to serve the needs of their organization. As a graduate of this program you will obtain a Milken Institute School of Public Health MPH degree in any of the MPH programs, providing the academic base and professional skills; and have priority placement for the two-year public health service assignment with the Peace Corps in a developing country, providing on-the-ground training and opening doors to an unforgettable experience. The Peace Corps assignment makes good use of your academic experience as your graduate studies bring you added competence, respect, and credibility in your country of service. Your competitiveness to gain future employment in the field of public health is significantly enhanced.

Students in the Master's Global Health Program with the Peace Corps complete MPH course work on The George Washington University campus and then enter the Peace Corps and begin their service in the assigned country. The Peace Corps experience becomes the Practicum required for the MPH degree, and generally also provides the basis for the required Culminating Experience. As Peace Corps volunteers, MPH students complete three months of intensive language, technical, and cross-cultural training followed by two years of service as public health workers. Upon satisfactory completion of the two-year Peace Corps service and the completion of

the Practicum, the student returns to GW and enrolls in the Culminating Experience and is awarded the MPH degree.

REQUIREMENTS

Admissions Requirements

To be eligible for this program, applicants must be accepted by both the Milken Institute School of Public Health and the Peace Corps through separate application processes. Apply to both programs simultaneously to allow sufficient time for the Peace Corps' medical and suitability clearances to be processed. While it is best to apply simultaneously to both programs, it may be possible to apply and be accepted to the Peace Corps after you have begun your MPH. The review of applications is independent and admission to one program does not guarantee admission to the other.

Peace Corps

To join the Peace Corps, applicants must be U.S. citizens, at least 18 years old, and in good physical health. Call or write for additional information regarding eligibility criteria and the excellent benefits package (including field practicum tuition waiver, language and cultural training, living/ housing expenses in the field, medical/dental coverage, deferment of student-loan repayment, transportation expenses to and from one's assigned country, vacation time and allowances, financial readjustment allowance, and employment assistance post-service). Master's International students should be willing to serve at any location assigned by the Peace Corps. Visit the Peace Corps website (<http://bulletin.gwu.edu/public-health/peace-corps/%20http://www.peacecorps.gov>) for more information.

Milken Institute School of Public Health

To join the SPH MPH program follow the application process described in the SPH Admissions web pages (<http://publichealth.gwu.edu/admissions/graduate-admissions>). Applicants must have a baccalaureate degree and submit all relevant documents by the stated application deadlines. Special MPH program requirements are detailed in the application.

Program Format

1. Apply to The Milken Institute SPH MPH program and the Peace Corps simultaneously, and gain acceptance to both programs;
2. Successfully complete all your on-campus class work (plan on one and one-half to two years) for the MPH with the exception of your Practicum and Culminating Experience;
3. Peace Corps in-service training program;
4. Deployment to your service site;
5. Soon after you settle in, submit your Practicum proposal to your SPH Practicum Director and gain approval for your Practicum (This can not be done earlier);
6. Carry out your Practicum and maintain communication with your SPH Practicum Director (at least quarterly, or as

directed by your Practicum Director) while completing your Peace Corps assignment;

7. Complete the Peace Corps assignment and return to The George Washington University to complete the Culminating Experience and graduate.

Visit the Milken Institute School of Public Health website (<http://publichealth.gwu.edu/programs/master%E2%80%99s-international-program-peace-corps-mph>) for more information.

DOCTOR OF MEDICINE AND MASTER OF PUBLIC HEALTH

Program Director S. Schroth

George Washington University School of Medicine and Health Sciences (SMHS) applicants and students can apply to the Milken Institute SPH to obtain a Master of Public Health (MPH) degree in one of the following programs:

- Biostatistics
- Community Oriented Primary Care
- Environmental Health Science & Policy
- Epidemiology
- Global Environmental Health
- Global Health
- Global Health Epidemiology
- Health Policy
- Health Promotion
- Maternal & Child Health
- Physical Activity in Public Health
- Public Health Communication & Marketing
- Public Health Management

REQUIREMENTS

While the MPH degree is 45 credits in length, joint students will enroll in 43 total MPH credits.

- Joint students do not take PUBH 6001 Biological Concepts/ PublicHlth (2 credits).
- SMHS accepts PUBH 6014 Practicum (2 credits) and PUBH 6015 Culminating Experience (2 credits), upon approval, which may fulfill the special project requirement for certain courses.

Students in the five year joint MD/MPH degree program may begin the MPH portion of the program at any time prior to the beginning of their fourth year in the MD program. All joint students are granted a one year leave of absence from medical school during which between 18 and 27 credits of MPH work are completed. The remaining course work is completed during the summer semesters, coincident with parts of the medical school curriculum, and during the spring semester

of the senior year of the MD curriculum when elective credit requirements for the MD degree are waived.

Visit the Milken Institute School of Public Health joint MD/MPH website (<http://publichealth.gwu.edu/programs/joint-mdmph>) for more information.

JURIS DOCTOR IN THE FIELD OF LAW AND MASTER OF PUBLIC HEALTH

Program Contact J. Teitelbaum

Hirsh Health Law and Policy Program

The Hirsh Health Law and Policy Program of The Milken Institute School of Public Health offers unique educational opportunities to law students, practicing lawyers, and health professions students. Endowed by Harold and Jane Hirsh and home to GW's joint degree programs in law and public health, the program is designed to foster an interdisciplinary approach to the study of health policy, health law, public health, and health care. The Hirsh Program's overall goal is to advance a greater understanding regarding how the law influences and shapes all facets of health care and public health, as well as how the changing system affects traditional areas of the law. At the same time, the program seeks to achieve the pragmatic objectives of readying law degree candidates and practicing lawyers for the broad range of health law-related careers that are available today.

Established in 1997, the Hirsh Program is structured to allow students to take maximum advantage of its location in Washington, DC, the center of the national health policy and law debate. The program is designed to provide a solid grounding in individual and population health, from the health care and public health systems themselves to extensive coursework in advanced health policy and law. The program serves Juris Doctor (JD) and Master of Laws (LLM) candidates as well as lawyers pursuing health law careers and all manner of health profession students.

Joint Degree Admissions Information

Applicants to the joint law-public health degree/certificate program may apply for admission to GW's SPH at the time they apply to the GW Law School or after admission to the Law School. JD candidates who do not apply concurrently to the Law School and SPH are encouraged to file the MPH or Certificate application by the spring semester of their first year of law school. LLM candidates are encouraged to apply to SPH at the time they apply to the Law School or during their first semester on campus.

Applicants to the joint law-public health program must complete the application processes for both the GW Law School (JD or LLM) and for the Milken Institute School of Public Health (MPH or Certificate). Admission to the joint degree program requires admissions acceptances from both Schools.

However, because admission to each School is separate and distinct, applicants who are accepted by one School but not the other are free to enroll in the School to which they have been accepted.

Applications for both programs are available on the Law School website (<http://www.law.gwu.edu/Admissions/Pages/Default.aspx>) and SPH website (<http://publichealth.gwu.edu/admissions>). Whether applying simultaneously to both Schools or as a current GW Law student, applicants must complete the SOPHAS application as indicated at the SPH website.

Internship/Research Opportunities

The Hirsh Program offers extensive assistance in arranging internships in congressional offices, federal agencies, and the hundreds of national health organizations located in and throughout the Washington, D.C. metropolitan area. Through its affiliation with the Department of Health Policy, the program also engages in extensive law-related health policy research, offering Hirsh Program students paid and unpaid training opportunities during their period of study. Please visit the Department's website (<http://www.gwhealthpolicy.org>) for a description of the types of research in which it engages.

REQUIREMENTS

MPH Requirements

The course of study for the MPH degree consists of 45 credits in one of several focus areas (<http://publichealth.gwu.edu/node/766>), including a supervised Practicum. Because eight of these credits may be cross-credited from the Law School (i.e., the Milken Institute SPH accepts eight Law School credits toward completion of the MPH degree), JD and LLM students need only complete 37 credits of coursework through the SPH to obtain an MPH degree.

Depending upon the focus area in which a JD student chooses to study, the joint degree can be earned, as a general rule, in 3-and-a-half or 4 years of full-time study, including summer enrollment. JD candidates selecting joint degree studies in one of the more science-oriented areas, such as epidemiology or biostatistics, should anticipate a 4-year course of study. Candidates selecting a less scientific area, such as health policy or health management, can expect to complete their joint degrees in 3-and-a-half years. Full-time LLM/MPH candidates should anticipate completing their joint degrees in approximately 2 years. Part-time JD and LLM candidates pursuing joint degrees will, of course, have longer courses of study.

Certificate Requirements

The course of study for the Graduate Certificate consists of 18 credits in one of several focus areas (<http://publichealth.gwu.edu/node/768>). However, because six credits may be cross-credited from the Law School (i.e., the Milken Institute SPH accepts six Law School credits toward completion of the certificate program), JD and LLM students need only

complete 12 credits of coursework through the SPH to obtain a graduate certificate in public health. Upon an individual's subsequent acceptance to the MPH degree program, credits from the Graduate Certificate program may be transferred to the MPH degree program. Full-time JD candidates can complete a graduate certificate during their regular course of study in the Law School. Full-time LLM/certificate candidates typically complete the program in one and one-half years.

ENVIRONMENTAL AND OCCUPATIONAL HEALTH

The Department of Environmental and Occupational Health (EOH) works to further our understanding of how natural and human-made environments impact human health. We offer programs that challenge students to explore both the underlying science and policy remedies for topics including sustainable cities and food systems, climate change mitigation, workplace safety and risk management. With our Washington, D.C. location and active alumni network, students gain practical work experience and make important connections in a variety of industries, nonprofit organizations and government agencies.

GRADUATE

Master's programs

- Master of Public Health in environmental health science and policy (p. 192)
- Master of Public Health in global environmental health (p. 194)

Doctoral program

- Doctor of Public Health in environmental and occupational health (p. 197)

FACULTY

Professors G. Gray, L. Goldman, M. J. Perry (*Chair*), L. B. Price

Associate Professors P.T. LaPuma, S. McCormick

Assistant Professors K.M. Applebaum, J. Graham, A.L. Northcross, A.R. Zota

MASTER OF PUBLIC HEALTH IN THE FIELD OF ENVIRONMENTAL HEALTH SCIENCE AND POLICY

Program Director K. Applebaum

Practicum Director P. LaPuma

Mission

The Mission of the Environmental Health Science and Policy MPH program is to educate individuals who are committed to public health protection to apply critical analytic skills to the

development, implementation and evaluation of practices and policies aimed at preventing or minimizing the adverse impact of environmental and occupational hazards on human health.

Goals

Our graduates will possess a multidisciplinary knowledge base and skill set that will provide them a framework for addressing environmental and occupational health (EOH) issues. They will understand three distinct scientific foundations of environmental health in order to:

- Assess and control environmental and occupational exposures;
- Understand the effects of these exposures on human health; and
- Interpret epidemiologic and other research findings related to environmental risks.

Furthermore, graduates will be prepared to build on this science base in order to:

- Analyze policy implications and participate in policy development, implementation and evaluation; and
- Assess and manage environmental and occupational risks.

COMPETENCIES

Upon Completion of the Master of Public Health program in the field of environmental health science and policy, students should possess the following functional competencies.

- Assess environmental and occupational exposures. Students will be able to assess human exposures to environmental and occupational hazards for the purposes of evaluating human health hazards, conducting epidemiological research, and preventing and controlling hazards.

Relevant courses

PUBH 6121	Envrnmntl&OccptnalEpidemiology
PUBH 6126	Assessment&Control/Env Hazards
PUBH 6127	Germes: An Introduction to Environmental Health Microbiology
PUBH 6131	Applied Data Analysis in EOH

- Prevent and control environmental and occupational hazards. Students will be able to recommend appropriate interventions – such as engineering controls, behavior change, or material substitution – for reducing human exposures to environmental and occupational hazards.

Relevant courses

PUBH 6124	Problem Solving in EOH
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PUBH 6125	Intro-Children's Health & Env
PUBH 6126	Assessment&Control/Env Hazards
PUBH 6127	Germes: An Introduction to Environmental Health Microbiology
PUBH 6128	Global Envrnmtl & Occptnl Hlth
PUBH 6129	Problem Formulation in EOH
PUBH 6130	Sustainable Energy & Environmt

- Identify the adverse effects of chemical, biological, and physical exposures on human health. Students will be able to describe the structure and function of human organ systems and identify environmental and occupational agents that disrupt these systems to cause disease and injury. Students will be able to identify the main mechanisms by which environmental and occupational agents gain access to and adversely affect human health, as well as factors which affect susceptibility to such adverse effects.

Relevant courses

PUBH 6123	Toxicology: Applic for PH Pol
PUBH 6124	Problem Solving in EOH
PUBH 6125	Intro-Children's Health & Env
PUBH 6127	Germes: An Introduction to Environmental Health Microbiology

- Interpret epidemiologic and other research findings related to environmental risks, and assist in designing and conducting research. Students will be able to critically assess existing epidemiologic research, to assist in designing and carrying out appropriate studies for investigating EOH problems, to conceptualize data analysis to address study goals, and to utilize appropriate approaches to manage and analyze data.

Relevant courses

PUBH 6121	Envrnmntl&OccptnlEpidemiology
PUBH 6122	Envir Policy, Politics, Progs
PUBH 6128	Global Envrnmtl & Occptnl Hlth
PUBH 6131	Applied Data Analysis in EOH
PUBH 6134	Communication Science for PubH

- Synthesize relevant information in order to analyze EOH policy implications and participate in policy development. Students will be able to apply various risk assessment approaches. They will be able to synthesize relevant information, including values, for the purposes of assessing

risk and evaluating policy strategies to reduce and prevent environmental and occupational disease and injury.

Relevant courses

PUBH 6122	Envir Policy, Politics, Progs
PUBH 6123	Toxicology: Applic for PH Pol
PUBH 6124	Problem Solving in EOH
PUBH 6125	Intro-Children's Health & Env
PUBH 6128	Global Envrnmtl & Occptnl Hlth
PUBH 6130	Sustainable Energy & Environmt
PUBH 6133	Social Dimen Clim Chnge & Hlth

- Synthesize relevant information in order to assess and manage environmental and occupational risks. Students will be able to apply various risk management and risk communication frameworks. They will be able to synthesize relevant information, including values, for the purposes of assessing risk and evaluating management strategies to reduce and prevent environmental and occupational disease and injury.

Relevant courses

PUBH 6122	Envir Policy, Politics, Progs
PUBH 6124	Problem Solving in EOH
PUBH 6126	Assessment&Control/Env Hazards
PUBH 6127	Germes: An Introduction to Environmental Health Microbiology
PUBH 6130	Sustainable Energy & Environmt
PUBH 6133	Social Dimen Clim Chnge & Hlth

- Engage in public health communication and risk communication activities. Students will be able to communicate clearly and effectively in professional and community settings on public health issues and on environmental and occupational health hazards.

Relevant courses

PUBH 6121	Envrnmntl&OccptnlEpidemiology
PUBH 6122	Envir Policy, Politics, Progs
PUBH 6123	Toxicology: Applic for PH Pol
PUBH 6124	Problem Solving in EOH
PUBH 6125	Intro-Children's Health & Env
PUBH 6129	Problem Formulation in EOH

PUBH 6134	Communication Science for PubH
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- Identify ethical issues in environmental health policy and practice. Students will be able to discuss how scientific principles and societal values such as equity and environmental justice influence decision-making about environmental and occupational health problems in research, public health practice, policy, and management contexts.

Relevant courses

PUBH 6121	Envrnmntl&OccptnlEpidemiology
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PUBH 6122	Envir Policy, Politics, Progs
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PUBH 6123	Toxicology: Applic for PH Pol
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PUBH 6124	Problem Solving in EOH
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PUBH 6125	Intro-Children's Health & Env
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PUBH 6128	Global Envrnmntl & Occptnl Hlth
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PUBH 6129	Problem Formulation in EOH
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PUBH 6130	Sustainable Energy & Environmt
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PUBH 6133	Social Dimen Clim Chnge & Hlth
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Program electives

Two of the following:

PUBH 6125	Intro-Children's Health & Env
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PUBH 6127	Germes: An Introduction to Environmental Health Microbiology
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PUBH 6128	Global Envrnmntl & Occptnl Hlth
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PUBH 6130	Sustainable Energy & Environmt
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PUBH 6133	Social Dimen Clim Chnge & Hlth
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PUBH 6134	Communication Science for PubH
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Electives

Any SPH graduate courses

Practicum and culminating experience

PUBH 6014	Practicum
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PUBH 6015	Culminating Experience
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REQUIREMENTS

Required core courses

PUBH 6001	BiologicalConcepts/PublicHlth
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PUBH 6002	Biostatistical Applic for PubH
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PUBH 6003	Prin & Practice/Epidemiology
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PUBH 6004	Env/Occ Hlth-Sustainable World
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PUBH 6006	Mgt & Policy Approaches to PH
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PUBH 6007	Social&BehaviorAppr-Pub.Hlth
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Required program-specific courses

PUBH 6121	Envrnmntl&OccptnlEpidemiology
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PUBH 6122	Envir Policy, Politics, Progs
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PUBH 6123	Toxicology: Applic for PH Pol
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PUBH 6124	Problem Solving in EOH
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PUBH 6126	Assessment&Control/Env Hazards
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PUBH 6129	Problem Formulation in EOH
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PUBH 6131	Applied Data Analysis in EOH
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Graduation Requirements

- Graduate credit requirement: 45 graduate credits are required.
- Course requirements: Successful completion of the core courses and the program-specific courses are required.
- Grade point requirement: A 3.0 (B average) overall grade point average is required.
- Time limit requirement: The degree must be completed within four years.
- Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL ENVIRONMENTAL HEALTH

Program Director J. Graham

Practicum Director S. McCormick

Mission

The Mission of the Global Environmental Health MPH program – a joint program between the Departments of Global Health and Environmental and Occupational Health – is to educate individuals who are committed to working in resource-poor settings and applying analytic skills to prevent or mitigate the adverse impact of environmental hazards on human health. The

program has a particular focus on traditional environmental health hazards—that is, health risks that are a consequence of a lack of access to clean water, inadequate sanitation, poor hygiene, household air pollution, solid waste disposal, and vector-borne diseases such as malaria.

Goals

Our graduates will hold a multidisciplinary knowledge base and skill set that will provide them a framework for addressing environmental health issues from environmentally mediated disease in the poorest performing regions of the world. They will understand the scientific and cultural foundations of environmental health in order to:

- Assess environmental exposures and understand the effects of these exposures on human health;
- Interpret epidemiologic and other research findings related to global environmental health risks; and
- Assume leadership roles in designing, implementing and evaluating programs that focus on modification of environmental health-related behaviors at local, regional, national and/or global levels.

COMPETENCIES

Upon completion of the MPH program in global environmental health, students should possess the following functional competencies.

- Assess environmental and occupational hazards using both qualitative and quantitative methods. Students will be able to assess human exposures to environmental and occupational hazards for the purposes of evaluating human health hazards, conducting epidemiological research, and preventing and controlling hazards. Students will be able to address both long-established environmental risk factors, such as unsafe water and air pollution, as well as emerging environmental risks, such as climate change.

Relevant Courses

PUBH 6121	Envrnmntl&OccptnlEpidemiology
PUBH 6126	Assessment&Control/Env Hazards
PUBH 6128	Global Envrnmntl & Occptnl Hlth
PUBH 6131	Applied Data Analysis in EOH
PUBH 6411	Global Health Qualitative Research Methods

- Interpret epidemiologic and other research findings related to global environmental health risks, and assist in designing and conducting research. Students will be able to critically assess existing epidemiologic research, to assist in designing and carrying out appropriate studies for investigating environmental

health problems, to conceptualize data analysis to address study goals, and to utilize appropriate approaches to manage and analyze data.

Relevant Courses

PUBH 6121	Envrnmntl&OccptnlEpidemiology
PUBH 6128	Global Envrnmntl & Occptnl Hlth
PUBH 6131	Applied Data Analysis in EOH
PUBH 6411	Global Health Qualitative Research Methods

- Critically analyze relevant information in order to design and implement mitigation measures for environmental and occupational health risks, while also addressing underlying vulnerabilities. Students will be able to synthesize relevant information, including qualitative and quantitative data, for the purposes of designing mitigation strategies to reduce and prevent environmental and occupational disease and injury. Students should be able to understand and compare the determinants of health in different regions of the world, including the: historical, economic, social and cultural, and political.

Relevant Courses

PUBH 6126	Assessment&Control/Env Hazards
PUBH 6128	Global Envrnmntl & Occptnl Hlth
PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs
PUBH 6400	Global Health Frameworks
PUBH 6411	Global Health Qualitative Research Methods

- Identify ethical issues in environmental health research, policy and practice. Students will be able to discuss how scientific principles and societal values such as equity and environmental justice influence decision-making about environmental and occupational health problems in research, public health practice, policy, and management contexts.

Relevant Courses

PUBH 6121	Envrnmntl&OccptnlEpidemiology
PUBH 6128	Global Envrnmntl & Occptnl Hlth

- Apply the principles of epidemiology, economic and social development, policy and political analysis to the identification, classification and elaboration of global health threats and opportunities at the community, national and international levels.

Students will be able to assess the global burden of disease through multiple frames, including: natural resources, health economics, infectious and chronic disease, nutrition, unintentional and intentional injury, culture, social and political organization, humanitarian emergencies and international organizations. They will be able to apply different frameworks to the description, analysis and critique of new global health issues; and draw from various authoritative data sources and basic epidemiological, socio-cultural and economic principles to assess and describe the health situation in a given country or major state.

Relevant Courses

PUBH 6400	Global Health Frameworks
PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs
PUBH 6435	Global Health Program Development and Implementation

- Assess the functions, capacities, management and governance of governmental, international and non-state organizations in the translation of scientific and program evidence to inform public health policy making and strategy development. Students should be able to demonstrate their understanding of the responsibilities, structure, focus and modus operandi of the legislative, advocacy and program evaluation actors in the Washington global health policy arena; their knowledge of the major institutions in the global environmental health field; and how those major institutions work together and independently to influence the direction of global environmental health policy and the shape of programs. Students should also be able to apply this knowledge to the design and analysis of advocacy for policy and programmatic change.

Relevant Courses

PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs
PUBH 6400	Global Health Frameworks
PUBH 6435	Global Health Program Development and Implementation

REQUIREMENTS

All students who select the global environmental health program enroll in core courses (15 credits), program-specific courses (17 credits), and electives (9 credits). The 45-credit degree program also includes a practicum (2 credits) and a culminating experience (2 credits) where students apply their didactic education in a real world setting.

Program Requirements

Required Core Courses

PUBH 6001	Biological Concepts/Public Hlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth

Required EOH Courses

PUBH 6121	Envrnmtl&Occptnl Epidemiology
PUBH 6126	Assessment&Control/Env Hazards
PUBH 6128	Global Envrnmtl & Occptnl Hlth
PUBH 6131	Applied Data Analysis in EOH

Required GH Courses

PUBH 6400	Global Health Frameworks
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6435	Global Health Program Development and Implementation

Electives

9 credits from the following:

PUBH 6123	Toxicology: Applic for PH Pol
PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs
PUBH 6125	Intro-Children's Health & Env
PUBH 6127	Germes: An Introduction to Environmental Health Microbiology
PUBH 6130	Sustainable Energy & Environmt
PUBH 6133	Social Dimen Clim Chnge & Hlth
PUBH 6134	Communication Science for PubH
PUBH 6262	Intro-Geog Information Systems
PUBH 6271	Disaster Epidemiology
PUBH 6435	Global Health Program Development and Implementation

PUBH 6437 Case Study Methods for Global Health Evaluation

PUBH 6480 Public Health in Complex Emergencies

Practicum and Culminating Experience

PUBH 6014 Practicum

PUBH 6015 Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

DOCTOR OF PUBLIC HEALTH IN THE FIELD OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH

Program Director G. Gray

Mission

The mission of the Department of Environmental and Occupational Health (EOH) is to increase the body of knowledge that addresses the adverse health effects of environmental and occupational exposures; to disseminate knowledge through the education of students and health practitioners; and to apply that knowledge in the clinical, environmental, and workplace settings.

Goal

The goal of the EOH DrPH program is to prepare students for advanced level professional work in research, policy, and program design and administration in the field of Environmental and Occupational Health.

Admissions Requirements

The Doctor of Public Health Program is designed for mid-career professionals seeking to become public health leaders. Applicants who have completed an MPH degree from a Council of Education for Public Health (CEPH) accredited program are strongly preferred for admission to the DrPH Program. Alternatively, applicants with a master's degree in

another field may indicate their relevant training, research experience, or educational background comparable to the MPH. Doctoral applicants admitted without an MPH will be required to take additional course work at the graduate level that does not apply toward the minimum 48 credits required for the DrPH. Qualified applicants with degrees from institutions in foreign countries are also eligible for admission. All applicants must submit scores from the Graduate Record Exam (GRE) taken within five years of the date of application. Because admission to this program is highly selective, successful applicants have competitive academic credentials and substantial prior public health professional work experience related to the specialty field to which they are applying.

Program Policies and Procedures

For program policies and procedures, please refer to the Doctor of Public Health Handbook and other resources on the DrPH in the field of Environmental and Occupational Health website. (<http://publichealth.gwu.edu/programs/environmental-occupational-health-drph>)

COMPETENCIES

DrPH Core Competencies

The Doctor of Public Health (DrPH) Program prepares professionals to assume national and international leadership positions in environmental and occupational health, global health, health behavior, and health policy. The field of public health provides unique insights into the complex interrelationships between health, politics, and human development. It enables professionals to address public health issues by marshalling research and analytic skills to develop innovative approaches to understand health and to promote and advocate for improved health outcomes. Upon completion of the DrPH, students will demonstrate ability in these core competencies:

- Analyze a public health problem and determine appropriate sources of data and methods for problem identification, program planning, implementation, monitoring, and evaluation.

Relevant Courses

PUBH 6249 StatPackages/DataMgt&DataAnlys

PUBH 6260 Adv DataAnalysis-Public Health

PUBH 8417 Qual Research Methods&Analysis

PUBH 8419 Measrmnt/PubHlth&HlthSrvcsRes

- Develop and analyze hypotheses that can be tested by appropriate quantitative or qualitative research designs and methodologies.

Relevant Courses

PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8422	AdvHlthCare&PublHlthRsrchDes

- Synthesize and evaluate research conducted by others.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8422	AdvHlthCare&PublHlthRsrchDes

- Design strategies to accurately and effectively describe public health, economic, administrative, legal, social, political, and cultural implications of different health policy options.

Relevant Courses

PUBH 6247	Design of Health Studies
PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8417	Qual Research Methods&Analysis
PUBH 8419	Measrmnt/PublHlth&HlthSrvcsRes

- Design grant proposals to address public health problems.

Relevant Courses

PUBH 8416	Study Design & Evaluation Methods
PUBH 8422	AdvHlthCare&PublHlthRsrchDes

- Present public health data and research syntheses to scientific and professional audiences and the public.

Relevant Courses

PUBH 8407	AdvTpc-HlthLdrshp/IntlSettings
PUBH 8422	AdvHlthCare&PublHlthRsrchDes

- Defend the feasibility and expected outcomes of different policy options and transform them into organizations, plans, processes, and programs. Relevant courses:

Relevant Courses

PUBH 6247	Design of Health Studies
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PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8417	Qual Research Methods&Analysis
PUBH 8422	AdvHlthCare&PublHlthRsrchDes

- Appraise the dynamic forces that contribute to cultural diversity and develop responsive plans and programs.

Relevant Courses

PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods
PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8417	Qual Research Methods&Analysis

- Assess the determinants of health and illness, factors that contribute to health promotion and disease prevention, and factors that influence the use and cost of public health services in a population.

Relevant Courses

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health

- Develop and defend a budget statement that presents programmatic fiscal requirements to achieve stated objectives.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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- Describe the theory of organizational structure and its relation to professional practice.

Relevant Courses

PUBH 6001	BiologicalConcepts/PublicHlth
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- Support a culture of ethical standards of conduct in the research process and within organizations and communities.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8416	Study Design & Evaluation Methods
PUBH 8422	AdvHlthCare&PublHlthRsrchDes

- Lead a team of diverse professionals reflecting shared values and vision to achieve specific objectives.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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Program-Specific Competencies

On completion of the DrPH Program in Environmental and Occupational Health, students will possess the following functional competencies and subject area knowledge:

- Appropriately apply the fundamental principles of epidemiology, biostatistics, toxicology and exposure assessment, in the comprehensive identification, characterization and assessment of environmental and occupational health risk.

Relevant Courses

PUBH 6121	Envrnmntl&OccptnlEpidemiology
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PUBH 6123	Toxicology: Applic for PH Pol
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PUBH 6124	Problem Solving in EOH
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PUBH 6126	Assessment&Control/Env Hazards
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PUBH 8411	AdvTpc-PrinEnvHlthRiskScience
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PUBH 8412	AdvTpc-Env&OccHlthRsrch&Practc
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PUBH 8416	Study Design & Evaluation Methods
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PUBH 8417	Qual Research Methods&Analysis
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PUBH 8418	Applied Statistical Analysis
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PUBH 8420	Advanced Analysis & Dissemination
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PUBH 8422	AdvHlthCare&PublicHlthRsrchDes
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PUBH 8423	Dissertation Research
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- Appropriately apply the fundamental principles of epidemiology, biostatistics, toxicology, exposure assessment, risk assessment and risk communication in developing and implementing comprehensive strategies for the management of environmental and occupational health risk, incorporating the issues associated with the political, social and economic context in which the risk occurs.

Relevant Courses

PUBH 6121	Envrnmntl&OccptnlEpidemiology
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PUBH 6123	Toxicology: Applic for PH Pol
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PUBH 6124	Problem Solving in EOH
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PUBH 6126	Assessment&Control/Env Hazards
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PUBH 8411	AdvTpc-PrinEnvHlthRiskScience
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PUBH 8412	AdvTpc-Env&OccHlthRsrch&Practc
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PUBH 8414	Policy/Management Leadership
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PUBH 8416	Study Design & Evaluation Methods
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PUBH 8417	Qual Research Methods&Analysis
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PUBH 8418	Applied Statistical Analysis
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PUBH 8420	Advanced Analysis & Dissemination
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PUBH 8422	AdvHlthCare&PublicHlthRsrchDes
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PUBH 8423	Dissertation Research
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- Successfully manage an interdisciplinary team of professionals in accomplishing risk analysis (including risk assessment, risk communication and risk management).

Relevant Courses

PUBH 6122	Envir Policy, Politics, Progs
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PUBH 6124	Problem Solving in EOH
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PUBH 8401	Found PH Leadership & Practice
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PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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PUBH 8411	AdvTpc-PrinEnvHlthRiskScience
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PUBH 8412	AdvTpc-Env&OccHlthRsrch&Practc
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PUBH 8414	Policy/Management Leadership
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- Critically assess the basis for the development and implementation of environmental and occupational health policy in the face of inevitable scientific uncertainty, taking into account science and technology, law, politics, economics and human values.

PUBH 6122	Envir Policy, Politics, Progs
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PUBH 6124	Problem Solving in EOH
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PUBH 8401	Found PH Leadership & Practice
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PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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PUBH 8411	AdvTpc-PrinEnvHlthRiskScience
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PUBH 8412	AdvTpc-Env&OccHlthRsrch&Practc
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PUBH 8423	Dissertation Research
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- Evaluate the success of environmental and occupational health programs for accomplishing risk analysis objectives.

Relevant Courses

PUBH 6124	Problem Solving in EOH
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PUBH 6126	Assessment&Control/Env Hazards
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PUBH 8401	Found PH Leadership & Practice
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PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8411	AdvTpc-PrinEnvHlthRiskScience
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8418	Applied Statistical Analysis
PUBH 8419	Measrmnt/PubHlth&HlthSrvcsRes
PUBH 8420	Advanced Analysis & Dissemination
PUBH 8422	AdvHlthCare&PublHlthRsrchDes
PUBH 8423	Dissertation Research

PUBH 6127	Germs: An Introduction to Environmental Health Microbiology
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PUBH 6128	Global Envrnmtl & Occptnl Hlth
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PUBH 6130	Sustainable Energy & Environmt
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PUBH 6199	Topics in EOH (Microbial Risk Assessment)
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PUBH 6199	Topics in EOH (Pesticide Exposures and Cancer)
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PUBH 6199	Topics in EOH (Food and the Global Environment)
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4 credits of professional leadership courses

PUBH 8415	Instructional Leadership
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PUBH 8413	Research Leadership
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Comprehensive examination

8-11 credits of dissertation preparation and dissertation

PUBH 8422	AdvHlthCare&PublHlthRsrchDes
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Advanced Health Care and Public Health Research Design
Prerequisites: Pass Comprehensive Exam, Approval of Program Director, & one page abstract

PUBH 8423	Dissertation Research
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Dissertation Research – DrPH Degree Dissertation Research

REQUIREMENTS

Program requirements

20 credits of required foundational and research methods courses

PUBH 8401	Found PH Leadership & Practice (Doctoral Seminar)
PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8418	Applied Statistical Analysis
PUBH 8419	Measrmnt/PubHlth&HlthSrvcsRes
PUBH 8420	Advanced Analysis & Dissemination

6 credits of required EOH specialty field courses

PUBH 8411	AdvTpc-PrinEnvHlthRiskScience (Doctoral Seminar)
PUBH 8412	AdvTpc-Env&OccHlthRsrch&Practc

7-10 credits of elective specialty field courses (sample list)

PUBH 6121	Envrnmtl&OccptnlEpidemiology
PUBH 6122	Envir Policy, Politics, Progs
PUBH 6123	Toxicology: Applic for PH Pol
PUBH 6124	Problem Solving in EOH
PUBH 6125	Intro-Children's Health & Env
PUBH 6126	Assessment&Control/Env Hazards

Graduation Requirements*

1. Graduate credit requirement: 60 graduate credits are required.
2. Course requirements: successful completion of the foundational and research methods courses. The program-specific specialty field courses and the professional leadership credits are required.
3. Comprehensive exam: Once the course of study is completed, students are required to pass the comprehensive exam to be officially admitted to the candidacy phase.
4. Dissertation: PUBH 8422 AdvHlthCare&PublHlthRsrchDes in addition to 6-12 dissertation research credits are required. Once the proposal has been successfully defended and dissertation research credits have been met, the oral defense may be scheduled.
5. Grade point requirement: A 3.0 (B average) overall grade point average is required.
6. Time limit requirement: The degree must be completed within eight (8) years.
7. Transfer credit policy: up to 12 graduate credits may be transferred to the DrPH degree, with program director approval. Credits must have been earned from an

accredited institution in the last 3 years with a grade point of 3.0 or better.

EPIDEMIOLOGY AND BIOSTATISTICS

The Department of Epidemiology and Biostatistics integrates diverse educational programs with a rapidly growing research portfolio. Graduate students have the opportunity to study and participate in faculty research projects in a variety of academic disciplines including infectious disease, cancer, nutritional and disaster epidemiology, applied biostatistical methods and public health laboratory science. In their Practicum, students work closely with scientists at local health departments, the NIH and other federal agencies, academic institutions, and international health organizations. By exploring the core quantitative sciences of public health and taking advantage of opportunities to “learn by doing,” students are prepared to become the next generation of public health leaders and practitioners.

GRADUATE

Master's programs

- Master of Public Health in the field of biostatistics (p. 201)
- Master of Public Health in the field of epidemiology (p. 203)
- Master of Public Health in the field of global health epidemiology (p. 242)
- Master of Science in biostatistics (p. 206) (Jointly administered by the Department of Statistics in CCAS and the Department of Epidemiology and Biostatistics in SPH)
- Master of Science in epidemiology (p. 208)
- Master of Science in public health microbiology and emerging infectious diseases (p. 209)

Doctoral programs

- Doctor of Philosophy in biostatistics (p. 211) (Jointly administered by the Department of Statistics in CCAS and the Department of Epidemiology and Biostatistics in SPH)
- Doctor of Philosophy in epidemiology (p. 213)

FACULTY

Professors A. E. Greenberg (*Chair*), L. Guay (*Research*), K. Hirst (*Research*), D. A. Hoffman, J. Jordan, J. M. Lachin, R. K. Riegelman, D. A. Verme, S. J. Simmens (*Research*), E. A. Thom (*Research*)

Associate Professors A. D. Castel, S. D. Cleary, K. L. Drews (*Research*), H. J. Hoffman, K. Jablonski (*Research*), I. Kuo (*Research*), M. Magnus, M. M. Rice (*Research*), K. Z. Robien, N. Younes, H. A. Young

Assistant Professors I. Bebu (*Research*), B. Braffett (*Research*), R. G. Clifton (*Research*), A. Elmi, M. Ghosh, S. Glick, Y. Ma

(*Research*), J. Peterson (*Research*), M. Smurzynski (*Research*), M. Temprosa (*Research*)

MASTER OF PUBLIC HEALTH IN THE FIELD OF BIOSTATISTICS

Program Director H. Hoffman

Mission

The mission of the Biostatistics Program is to educate graduate students in developing the necessary methodological and quantitative skills to successfully apply statistical methods to the biological, biomedical and health services sciences. In addition to enhance students' capacity to think critically and creatively, we are determined to deepen their commitment to improving the public's health, to engaging in and promoting public service – qualities that are essential for future biostatisticians and public health practitioners.

Goals

The goals of the Biostatistics Program are to ensure that graduates:

- Understand and adhere to high scientific standards for research;
- Understand how to apply statistical methods to biological/ biomedical sciences and health services
- Understand and follow guidelines for ethical treatment of research participants;
- Communicate research findings to a lay audience; and
- Respect cultural diversity throughout all of the above.

COMPETENCIES

The specialization in biostatistics focuses on developing students' skills in the statistical analysis and interpretation of health research data. The following competencies were developed in concert with professors of biostatistics courses (at GW as well as from other CEPH-accredited MPH programs), biostatistics textbooks, conversations with prospective employers likely to hire MPH-biostatistics graduates, and with experience teaching biostatistics courses to MPH students. ASPH Education Committee competencies were also consulted.

Upon completion of the Master of Public Health in the field of biostatistics, students will demonstrate functional competence to:

- Enumerate and apply the underlying principles and methods to design, plan, and conduct public health and biomedical studies including cohort, case control, cross-sectional, and clinical trials.

Relevant courses

PUBH 6247

Design of Health Studies

PUBH 6249	StatPackages/DataMgt&DataAnlys
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PUBH 6260	Adv DataAnalysis-Public Health
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PUBH 6266	Biostatistical Methods
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- Conduct data analysis and interpret the results from public health and biomedical studies including cohort, case control, cross-sectional, and clinical trials.

Relevant courses

PUBH 6247	Design of Health Studies
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PUBH 6249	StatPackages/DataMgt&DataAnlys
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PUBH 6258	Adv Topics/Biostat Consulting
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PUBH 6260	Adv DataAnalysis-Public Health
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PUBH 6266	Biostatistical Methods
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- Manipulate various databases from large scale epidemiological studies and clinical trials studies using statistical software, e.g. SAS®.

Relevant courses

PUBH 6299	Topics in Epi/Bio *
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PUBH 6249	StatPackages/DataMgt&DataAnlys
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PUBH 6260	Adv DataAnalysis-Public Health
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PUBH 6266	Biostatistical Methods
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- Use theoretical biostatistical concepts in an applied setting to identify the appropriate data analysis methods for public health and biomedical studies including cohort, case control, cross-sectional, and clinical trials.

Relevant courses

PUBH 6247	Design of Health Studies
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PUBH 6249	StatPackages/DataMgt&DataAnlys
-----------	--------------------------------

PUBH 6260	Adv DataAnalysis-Public Health
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PUBH 6264	Quantitative Methods
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PUBH 6266	Biostatistical Methods
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- Synthesize data and relevant literature and interpret findings from statistical analyses in a causal framework, in order to prepare manuscripts and make oral presentations for both professional and lay audiences.

Relevant courses

PUBH 6247	Design of Health Studies
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PUBH 6249	StatPackages/DataMgt&DataAnlys
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PUBH 6260	Adv DataAnalysis-Public Health
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PUBH 6266	Biostatistical Methods
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- Work as a member of a multidisciplinary research team and recognize and appropriately respond to ethical issues that arise in research.

Relevant courses

PUBH 6247	Design of Health Studies
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PUBH 6258	Adv Topics/Biostat Consulting
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- Provide biostatistical advice as a member of a team of researchers engaged in a biomedical or epidemiological research project.

Relevant courses

PUBH 6247	Design of Health Studies
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PUBH 6249	StatPackages/DataMgt&DataAnlys
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PUBH 6258	Adv Topics/Biostat Consulting
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PUBH 6264	Quantitative Methods
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PUBH 6266	Biostatistical Methods
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- Apply biomedical and epidemiological concepts in identifying and describing the determinants and the distribution of disease in human populations which is the necessary background for successful participation in studies of health and disease.

Relevant courses

PUBH 6247	Design of Health Studies
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PUBH 6249	StatPackages/DataMgt&DataAnlys
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PUBH 6260	Adv DataAnalysis-Public Health
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PUBH 6264	Quantitative Methods
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PUBH 6266	Biostatistical Methods
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- Identify and assess patterns of emerging diseases to postulate hypotheses and to propose appropriate strategies in order to Quantitatively evaluate the impact of health problems.

Relevant courses

PUBH 6247	Design of Health Studies
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PUBH 6249	StatPackages/DataMgt&DataAnlys
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PUBH 6258	Adv Topics/Biostat Consulting
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- Comprehend basic ethical and legal principles pertaining to the collection, maintenance, use and dissemination of biomedical and epidemiologic data.

Relevant courses

PUBH 6247	Design of Health Studies
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6266	Biostatistical Methods

REQUIREMENTS

Program Prerequisites

All applicants to the MPH Biostatistics degree program must have completed two semesters of college level calculus through calculus II with a grade of B or better to be considered for admission.

Course Requirements

The MPH degree program in biostatistics consists of 45 credits. These credits are based on a series of core courses (15 credits) and program-specific courses (20 credits), and electives (6 credits). The total 45-credit program also includes a practicum (2 credits) and a culminating experience (2 credits) where students apply their didactic education in a real-world setting.

Begin planning your practicum during Year 1.

Program Requirements

Required core courses

PUBH 6001	Biological Concepts/Public Hlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth

Required program-specific courses

PUBH 6247	Design of Health Studies
PUBH 6249	Stat Packages/Data Mgt & Data Anlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6260	Adv Data Analysis-Public Health
PUBH 6261	Epi-Bio Skills Bldg Seminar
PUBH 6264	Quantitative Methods

PUBH 6266	Biostatistical Methods
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Electives

Select epi-biostatistics courses with advisor's approval

Practicum and culminating experience

PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF EPIDEMIOLOGY

Program Co-Directors M. Magnus, H. Young

Mission

The mission of the Epidemiology program is to educate graduate students by developing the necessary methodological and quantitative skills to work successfully in the field. While nurturing students' capacity to think critically and creatively, we strive to deepen their commitment to improving the public's health and to engaging in and promoting public service qualities we believe are essential for future epidemiologists and public health practitioners.

Goals

The goals of the Epidemiology program are to ensure that graduates:

- Understand and adhere to high scientific standards for research;
- Understand and follow guidelines for ethical treatment of research participants;
- Can communicate research findings to a lay audience; and
- Respect cultural diversity throughout all of the above.

COMPETENCIES

The epidemiology specialization prepares students for epidemiological research and evaluation in academic, governmental, private-sector, and community health care sites. The curriculum prepares students to design and conduct studies, manage health data, and make leadership decisions in public health and clinical epidemiology. The following competencies were developed in concert with professors of epidemiology courses (at GW as well as other CEPH-accredited MPH programs), epidemiology textbooks, conversations with prospective employers likely to hire MPH-epidemiology graduates, and experience teaching epidemiology courses to MPH students. ASPH Education Committee competencies were also consulted.

Upon completion of the MPH in Epidemiology, students will demonstrate functional competence to:

- Apply epidemiological and biomedical concepts in identifying and describing the determinants and the distribution of disease in human populations.

Relevant Courses

PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health

- Identify and assess patterns of emerging diseases to postulate hypotheses and to identify appropriate strategies in order to evaluate the impact of health problems.

Relevant Courses

PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6244	Cancer Epidemiology
PUBH 6245	InfectiousDisease Epidemiology
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6259	Epid Surveillance/PublicHealth
PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health

- Enumerate and apply underlying principles and methods to design, plan, and conduct epidemiologic studies including observational and experimental designs, screening programs, public health surveillance, and other epidemiologic designs.

Relevant Courses

PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health

- Identify the appropriate data analysis methods, conduct data analysis using a computerized software program, and interpret the results from epidemiological studies.

Relevant Courses

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health

- Demonstrate proficiency in constructing and managing databases from epidemiological studies using statistical software, e.g. The SAS® System.

Relevant Courses

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6260	Adv DataAnalysis-Public Health

- Synthesize data and relevant literature to interpret findings in a causal framework, write manuscripts, and make oral presentations.

Relevant Courses

PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health

- Work in a multidisciplinary research team and recognize and appropriately respond to ethical and legal issues that arise in research.

Relevant Courses

PUBH 6247	Design of Health Studies
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- Define and critically assess issues in at least two of the following specialty areas in epidemiology:
 - Clinical epidemiology such as decision analysis, cost-effectiveness to clinical and public health problems.
 - Major topics in infectious disease epidemiology, including emerging infectious diseases, drug resistant pathogens, and perinatal and neonatal infections.

- Methods and issues of cancer epidemiology including descriptive and analytical studies with emphasis on genetic and molecular epidemiology.
- Methods and issues of chronic disease
- Methods and issues of surveillance systems in public health

Relevant Courses

PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6244	Cancer Epidemiology
PUBH 6245	InfectiousDisease Epidemiology
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6259	Epid Surveillance/PublicHealth

REQUIREMENTS

Course Requirements

MPH students who select the MPH Epidemiology Program enroll in Core Courses (15 credits), Program-Specific Courses (21 credits), and general electives (5 credits). The total 45 credit degree program also includes a Practicum (2 credits) and a Culminating Experience (2 credits) where students apply their didactic education in a real world setting.

Program Requirements

Required Core Courses

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth

Required Program Courses

PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6261	Epi-Bio Skills Bldg Seminar

Epidemiology Content Foundation Courses

At least two of the following:

PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6244	Cancer Epidemiology
PUBH 6245	InfectiousDisease Epidemiology
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6259	Epid Surveillance/PublicHealth

Department of Epidemiology-Biostatistics Electives

4 elective credits from the Department of Epidemiology-Biostatistics course offerings (sample list below - others may be announced):

PUBH 6253	Issues in HIV Care & Treatment
PUBH 6255	Org Responses to HIV/Epidemic
PUBH 6258	Adv Topics/Biostat Consulting (Instructor's Approval Required)
PUBH 6262	Intro-Geog Information Systems
PUBH 6263	Advanced GIS
PUBH 6267	Time Series:Applications in PH
PUBH 6268	Advanced SAS
PUBH 6269	Reproductive Epidemiology
PUBH 6270	HIV/AIDS Surveillance
PUBH 6271	Disaster Epidemiology
PUBH 6272	Infectious Agents- Cancer
PUBH 6273	Ethnographic Methods
PUBH 6274	Emerging ID for PH Pro's
PUBH 6484	Prev&Cont of VectorBorne Dis.
PUBH 6485	Prev&Cont of Water&Sanit. Dis.
PUBH 6238	Molecular Epidemiology
PUBH 6299	Topics in Epi/Bio (Behavioral Epidemiology)
PUBH 6281	Analysis of Complex Surveys Using SAS and Stata
PUBH 6299	Topics in Epi/Bio (Pesticide Exposures and Cancer)
PUBH 6241	Nutritional Epidemiology

Electives

Any SPH graduate course(s)

Practicum and Culminating Experience

PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF SCIENCE IN THE FIELD OF BIOSTATISTICS

Program Director and Academic Advisor D.A. Verme

The Master of Science (MS) degree program in Biostatistics is a 33 credit degree program jointly administered by the Department of Statistics in the Columbian College of Arts and Sciences (CCAS) and the Department of Epidemiology and Biostatistics in the Milken Institute School of Public Health (SPH), and its associated research facility, The Biostatistics Center. This degree program is accredited by the Middle States Council on Higher Education through the CCAS and by the Council on Education for Public Health through the SPH. Regulations and requirements for this graduate degree have been designed to be compatible with policies and scholarship requirements of both the CCAS and SPH. The degree is conferred by the CCAS.

At the completion of the MS program in Biostatistics students will be able to:

- Understand and the theory and principles behind statistical methods most commonly used in biomedical research (contingency tables, survival analysis, mixed models, and missing data).
- Understand and apply the underlying principles and methods to design, plan, and conduct biomedical studies.
- Provide biostatistical advice as a member of a team engaged in a biomedical research project. Includes manipulation and analysis of data.

Admissions Requirements

Applicants must hold an undergraduate degree from an accredited institution of higher learning. Applicants should have academic backgrounds of excellence, usually with majors, or equivalent, in the fields in which they intend to study for advanced degrees. Normally, a B average (or equivalent) from an accredited college is required. With evidence of special promise, such as high Graduate Record Examination scores, an applicant whose academic record falls short of a B average may be accepted on a conditional basis. Meeting the minimum requirements does not assure acceptance. The departments may, and often do, set higher admission standards. Moreover, the number of spaces available for new graduate students limits the number who can be accepted. Students who apply in their senior year must provide evidence of the completion of their baccalaureate work before registration in Columbian College is permitted. Applicants should be aware that graduate courses taken prior to admission while in non-degree status are not used in assessing admissibility to degree programs and may not be transferable into those programs.

If desired, a student may complete the M.S. program prior to admission to the Ph.D. degree program, in which case no more than 24 credit hours from the M.S. degree may be applied to the Ph.D. course work requirements. In this instance the student will be required to take a minimum of 27 additional credit hours of coursework. The distribution of these courses between statistics and public health would depend on the nature of the Master's degree and whether the transferred credit hours would be used to defray statistics or public health course work. Full information is available in the online Graduate Admissions Application. (<http://graduate.admissions.gwu.edu>) A detailed description of admissions policies is also available online (<http://columbian.gwu.edu/grad>).

COMPETENCIES

At the completion of the MS program in Biostatistics students will be able to:

- Understand and the theory and principles behind statistical methods most commonly used in biomedical research (contingency tables, survival analysis, mixed models, and missing data).
- Understand and apply the underlying principles and methods to design, plan, and conduct biomedical studies.
- Provide biostatistical advice as a member of a team engaged in a biomedical research project. Includes manipulation and analysis of data.

REQUIREMENTS

Minimum Prerequisite Courses for Admission Consideration (or equivalents to these GW courses)

The courses listed below (or equivalents) are prerequisites for admission consideration, and MUST appear on your transcript.

Submit your MS Biostatistics program admission application only after you have completed all of the following courses:

MATH 1231 Single-Variable Calculus I

MATH 1232 Single-Variable Calculus II

STAT 2118 Regression Analysis

Additional Course Requirements

The courses listed below are “Additional Course Requirements.” Applicants lacking these courses (or equivalents to these GW courses) will be considered for admission, but, if admissible, will be admitted conditionally with the expectation that these courses will be satisfactorily completed within two semesters following matriculation in the program. These credits do not count as credit toward the 33 credit graduation requirement, nor are grades earned in these additional courses reflected in the overall grade point average.

MATH 2184 Linear Algebra I

MATH 2233 Multivariable Calculus

One of the following:

STAT 1129 Introduction to Computing

STAT 2183 Statistical Computing Packages

PUBH 6249 StatPackages/DataMgt&DataAnlys

Program Requirements

Required core courses:

Required statistics core courses:

STAT 6201 Mathematical Statistics I

STAT 6202 Mathematical Statistics II

STAT 6210 Data Analysis

STAT 6227 Survival Analysis

PUBH 6265 Design of Medical Studies

PUBH 6266 Biostatistical Methods (Basis for Master’s Comprehensive Examination)

Required public health core courses:

PUBH 6001 Biological Concepts/Public Hlth

PUBH 6003 Prin & Practice/Epidemiology

PUBH 6099 Topics in Public Health

Approved elective courses:

6 credits from the following:

Approved statistics elective courses:

STAT 3187 Introduction to Sampling

STAT 4181 Applied Time Series Analysis

STAT 4188 Nonparametric Stat Inference

STAT 6215 Applied Multivariate Analysis I

STAT 6216 Applied Multivariate Analysis II

STAT 6217 Design of Experiments

STAT 6223 Bayesian Statistics: Theory and Applications

STAT 6231 Contingency Table Analysis

STAT 6242 Regression Graphics/Nonparametric Regression

STAT 6287 Modern Theory of Sample Surveys

STAT 8226 Advanced Biostatistical Methods

STAT 8265 Multivariate Analysis

STAT 8273 Stochastic Processes I

STAT 8281 Advanced Time Series Analysis

STAT 8288 Modern Theory/Sample Surveys

Approved public health elective courses:

PUBH 6004 Env/Occ Hlth-Sustainable World

PUBH 6006 Mgt & Policy Approaches to PH

PUBH 6121 Envrnmntl&Occptnl Epidemiology

PUBH 6242 ClinicalEpid&Decision Analysis

PUBH 6244 Cancer Epidemiology

PUBH 6245 InfectiousDisease Epidemiology

PUBH 6250 Epidemiology of HIV/AIDS

Consulting

PUBH 6258 Adv Topics/Biostat Consulting

PUBH 6283 Biostatistics Consulting Practicum

The Master’s Comprehensive Examination

The Master’s Comprehensive Examination is a written comprehensive examination in the field of Biostatistics and is based on the course content PUBH 6266 Biostatistical Methods. It is administered by the faculty from the Department

MASTER OF SCIENCE IN THE FIELD OF EPIDEMIOLOGY

Program Director S.D. Cleary

The Department of Epidemiology and Biostatistics offers the degree of Master of Science in Epidemiology. The goals of the MS degree are to prepare students for careers in industry or academia and to prepare students for continued study in a doctoral program. The program includes coursework that focuses on theoretical and applied epidemiological and statistical methods. Comprehensive examinations are required.

If desired, a student may apply for admission to the Ph.D. degree program prior to completing the M.S. degree, in which case no more than 24 credit hours from the M.S. degree may be applied to the Ph.D. course work requirements. In this instance, the student will be required to take a minimum of 27 additional credit hours of coursework. The distribution of these courses between epidemiology and statistics will depend on the nature of the Master's degree and whether the transferred credit hours would be used to defray epidemiology and statistics course work.

COMPETENCIES

At the completion of the MS program in Epidemiology students will be able to:

- Demonstrate proficiency in basic epidemiology concepts, e.g., formulate hypotheses and research aims, select appropriate study design, identify risk and/or protective factors that contribute to disease outcomes, develop analytic plans, and identify bias.
- Demonstrate competence using standard statistical software packages to manage and analyze primary data or conduct secondary data analyses to address research questions
- Demonstrate proficiency in data analysis and interpretation of results, including discussion of threats to internal validity, and compose a formal presentation or report
- Describe and apply methods to conduct sound ethical research

REQUIREMENTS

Prerequisite Requirements

(or equivalents to these GW courses)

The courses listed below (or equivalents) are prerequisites for admission consideration, and **MUST** appear on your transcript. Submit your MS Epidemiology program admission application only after you have completed all of the following courses:

BISC 1111	Introductory Biology: Cells and Molecules
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BISC 1112	Introductory Biology: The Biology of Organisms
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MATH 1231	Single-Variable Calculus I
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MATH 1232	Single-Variable Calculus II
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Additional Course Requirements

The courses listed below are "Additional Course Requirements." Applicants lacking these courses (or equivalents to these GW courses) will be considered for admission, but, if admissible, will be admitted conditionally with the expectation that these courses will be satisfactorily completed within two semesters following matriculation in the program.

STAT 2183	Statistical Computing Packages
or PUBH 6249	StatPackages/DataMgt&DataAnlys

Course Requirements

MS students who select the Epidemiology program enroll in Core Courses (22 credits) of which 16 credits are in Public Health and 6 credits are in Statistics as well as Electives (9 credits). The total 33 credit degree program also includes Consulting requirements (2 credits).

Program Requirements

Required public health core courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology (basis for MS general comprehensive)
PUBH 6247	Design of Health Studies (basis for MS general comprehensive)
PUBH 6252	Advanced Epidemiology Methods (basis for MS general comprehensive)
PUBH 6299	Topics in Epi/Bio (credits vary per course- may take 1 or 2 courses)

Required statistics core courses:

One of the following:

STAT 4157 & STAT 4158	Introduction to Mathematical Statistics I and Introduction to Mathematical Statistics I
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STAT 6201 & STAT 6202 Mathematical Statistics I and Mathematical Statistics II (students interested in applying to the PhD program in epidemiology may register in STAT 6201 & STAT 6202 with advisor's approval)

Approved elective courses:

9 credits from the following:

Approved public health courses:

PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
PUBH 6121	Envrnmntl&OccptnalEpidemiology
PUBH 6123	Toxicology: Applic for PH Pol
PUBH 6124	Problem Solving in EOH
PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6244	Cancer Epidemiology
PUBH 6245	InfectiousDisease Epidemiology
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6262	Intro-Geog Information Systems
PUBH 6299	Topics in Epi/Bio

Approved statistics elective courses:

STAT 2118	Regression Analysis
STAT 4181	Applied Time Series Analysis
STAT 3187	Introduction to Sampling

Consulting:

PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6283	Biostatistics Consulting Practicum

Graduation Requirements

1. Graduate Credit Requirement: 33 graduate credits are required
2. Comprehensive Exam: A written comprehensive exam will be administered based on the course content of PUBH 6003 Prin & Practice/Epidemiology, PUBH 6247 Design of Health Studies, and PUBH 6252 Advanced Epidemiology Methods. The exam is administered upon completion of all courses.

3. Grade Point Requirements: A 3.0 (B average) overall grade point average is required.
4. Time Limit Requirement: The MS must be completed within 4 years

M.S. IN PUBLIC HEALTH MICROBIOLOGY AND EMERGING INFECTIOUS DISEASES

Program Co-Directors D. Hoffman, J. Jordan

Mission

The mission of the MS degree in Public Health Microbiology and Emerging Infectious Diseases is to provide training to a new generation of public health professionals to expand knowledge and expertise in the areas of disease mechanisms, with an emphasis on microbial pathogens, the use and application of modern biotechnologies and in epidemiologic skills relevant to the prevention and control of problems in the community arising from infectious diseases.

Graduates of the MS program will have an in-depth understanding of the major laboratory, clinical, and public health aspects of humankind's microbial pathogens, and acquire epidemiologic skills relevant to the prevention and control of problems arising from infectious diseases and modern biotechnologies. Areas of emphasis will include: the design and analysis of epidemiologic data; emerging infections; tropical diseases;; and applications of genomics, proteomics, and bioinformatics. MS graduates will be employed in academic and industrial research laboratories, international health agencies, NGOs, and private consulting groups. In addition, they may work in federal, state, and local public health agencies or state and local public health laboratories where their technical expertise and population-based perspective will be extremely useful. Students earning this degree will help meet a national demand that has reached critical proportions for a trained workforce in biodefense and emerging infections, and an international demand for training in diseases that affect the developing countries.

Goals

The goals of the MS Program in Public Health Microbiology and Emerging Infectious Diseases are to ensure that graduates:

- Understand the biological complexities of microbial pathogens and the diseases they cause
- Recognize the major epidemiologic and clinical features of microbial disease
- Understand how new biotechnologies (including genomics, proteomics, and bioinformatics) can be applied to the study and control of microbial pathogens
- Develop an in-depth understanding of epidemiologic principles and practice

- Apply the principles of epidemiology, microbiology, and public health practice toward the detection, surveillance, investigation, and control of microbial diseases

COMPETENCIES

Program Specific Competencies

- Knowledge of the biological, environmental, and socio-behavioral determinants of human diseases, and of the public health impacts of disease.

Course

PUBH 6003	Prin & Practice/Epidemiology
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- Knowledge of the laboratory characteristics of bacterial, viral, and parasitic pathogens, as well as biological Class A, B, C agents associated with bioterrorism.

Courses

PUBH 6278	Public Health Virology
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PUBH 6276	Health Microbiology
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MICR 6292	Tropical Infectious Diseases
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- Knowledge of the public health manifestations of infectious agent.

Courses

PUBH 6276	Health Microbiology
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MICR 6292	Tropical Infectious Diseases
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- Knowledge of the principles of public health genomics.

Course

PUBH 6277	Public Health Genomics
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- Knowledge of the principles of microbial disease surveillance and epidemiology.

Courses

PUBH 6245	InfectiousDisease Epidemiology
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PUBH 6259	Epid Surveillance/PublicHealth
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- Skills to identify and analyze patterns of disease, to postulate hypotheses, to plan and implement studies (including outbreak investigations and analytic studies), to analyze, interpret and communicate results, and to evaluate the public health impact of such efforts.

Courses

PUBH 6003	Prin & Practice/Epidemiology
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PUBH 6002	Biostatistical Applic for PubH
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PUBH 6245	InfectiousDisease Epidemiology
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PUBH 6259	Epid Surveillance/PublicHealth
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- Knowledge of public health roles and procedures of biomedical and public health laboratories.

Course

PUBH 6275	Essential PH Lab Skills
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REQUIREMENTS

Prerequisite requirements

Students are required to have the following prerequisites to apply to this degree:

- Bachelor's degree in the life sciences or at least 12 credits in the biological sciences other than botany.
- Chemistry ≥ 3 credits
- Physics ≥ 3 credits
- 1 semester of calculus preferred; 2 semesters recommended.
- All prerequisites must be completed before matriculating.

Course requirements

The total 45 credits are distributed between foundation courses (10 credits), required program-specific courses (27 credits), elective courses (4 credits), the Field/Laboratory Experience (F/LE) and the Final Project (FP) (4 credits). It is expected that most students will complete the degree in approximately two to three years, depending on the course load taken each semester.

Foundation courses

PUBH 6002	Biostatistical Applic for PubH
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PUBH 6003	Prin & Practice/Epidemiology
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PUBH 6004	Env/Occ Hlth-Sustainable World
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PUBH 6275	Essential PH Lab Skills
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Required program specific courses

PUBH 6245	InfectiousDisease Epidemiology
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PUBH 6247	Design of Health Studies
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PUBH 6249	StatPackages/DataMgt&DataAnlys
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PUBH 6259	Epid Surveillance/PublicHealth
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PUBH 6261	Epi-Bio Skills Bldg Seminar
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PUBH 6262	Intro-Geog Information Systems
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PUBH 6274	Emerging ID for PH Pro's
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PUBH 6276	Health Microbiology
PUBH 6277	Public Health Genomics
PUBH 6278	Public Health Virology
MICR 6292	Tropical Infectious Diseases
MICR 8210	Infection and Immunity

Program-specific elective courses

4 credits from the following:

PUBH 6099	Topics in Public Health
PUBH 6127	Germs: An Introduction to Environmental Health Microbiology
PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs
PUBH 6244	Cancer Epidemiology
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6252	Advanced Epidemiology Methods
PUBH 6253	Issues in HIV Care & Treatment
PUBH 6263	Advanced GIS
PUBH 6270	HIV/AIDS Surveillance
PUBH 6271	Disaster Epidemiology
PUBH 6358	Vaccine Policy
PUBH 6399	Topics in Health Policy (i.e.- Homeland Security and Public Health)
PUBH 6484	Prev&Cont of VectorBorne Dis.

Field/laboratory experience and final project

PUBH 6016	Field/Laboratory Experience
PUBH 6280	MEID Final Project

Graduation requirements

1. Graduate Credit Requirement: 45 graduate credits required.
2. Course Requirements: Successful completion of the required courses.
3. Grade Point Requirements: An overall GPA of 3.0 (B average).
4. Time Limit Requirement: The degree must be completed within four years.
5. Transfer Credit Policy: Up to 12 credits that have not been applied to a previous graduate degree may qualify to be

transferred to the MS program. Credits must have been earned from an accredited institution in the last 3 years with a grade point average of 3.0 or better.

Students will also be expected to participate in a poster presentation at GW Research Day.

DOCTOR OF PHILOSOPHY IN THE FIELD OF BIOSTATISTICS

Program Director and Academic co-Advisor E. Bura (CCAS)

Academic co-Advisor D.A. Verme (Milken Institute SPH)

The Doctor of Philosophy degree program in the field of Biostatistics is a 72-credit degree program jointly administered by the Department of Statistics in the Columbian College of Arts and Sciences (CCAS) and the Department of Epidemiology and Biostatistics in the Milken Institute School of Public Health (SPH), and its associated research facility, The Biostatistics Center. This degree program is accredited by the Middle States Council on Higher Education through Columbian College and by the Council on Education for Public Health through the GW's SPH. Regulations and requirements for this graduate degree have been designed to be compatible with policies and scholarship requirements of both the Columbian College and SPH. The degree is conferred by Columbian College.

COMPETENCIES

At the completion of the PhD degree program in Biostatistics students will be able to:

- Conduct biostatistical methodology research.
- Understand the theory and principles of probability, statistical inference, and biostatistical methods including contingency tables, survival analysis, mixed models, and missing data
- Apply appropriate biostatistical methods for design and analysis of biomedical studies.
- Provide biostatistical advice as a member of a team engaged in a biomedical research project

REQUIREMENTS

Specific admission requirements are shown on the Graduate Program Finder (<http://www.gwu.edu/all-graduate-programs>)

Undergraduate course requirements (or equivalents to these GW courses) for admission consideration

MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
STAT 2118	Regression Analysis

MATH 2233 Multivariable Calculus

Additional course requirements* (or equivalents to these GW courses):

MATH 2184 Linear Algebra I

One of the following:

STAT 1129 Introduction to Computing

STAT 2183 Statistical Computing Packages

PUBH 6249 StatPackages/DataMgt&DataAnlys

* Applicants lacking these courses (or equivalents to these GW courses) will be considered for admission, but, if admissible, will be admitted conditionally with the expectation that these courses will be satisfactorily completed within two semesters following matriculation in the program. These credits do not count as credit toward the 72 credit graduation requirement nor are grades earned in additional courses reflected in the overall grade point average.

Ph.D. in the field of biostatistics degree requirements: 72 credits of course work and research, with a minimum of 51 credits of courses and a minimum of 12 credits of dissertation research.

Required statistics and public health core courses:

Required statistics core courses:

STAT 6201 Mathematical Statistics I

STAT 6202 Mathematical Statistics II

STAT 6210 Data Analysis

STAT 6213 Intermediate Probability and Stochastic Processes

PUBH 8365 Design of Medical Studies

PUBH 8366 Biostatistical Methods

STAT 8226 Advanced Biostatistical Methods

STAT 6227 Survival Analysis

STAT 8263 Advanced Statistical Theory I

Required public health core courses:

PUBH 6001 BiologicalConcepts/PublicHlth

PUBH 6003 Prin & Practice/Epidemiology

PUBH 6121 Envrnmntl&OccptnlEpidemiology

PUBH 6099 Topics in Public Health (may be repeated for credit)

One of the following:

PUBH 6007 Social&BehaviorAppr-Pub.Hlth

Approved elective courses:

PUBH 6006 Mgt & Policy Approaches to PH

9 credits from the following:

Approved statistics elective courses (at least 3 credits):

STAT 6231 Contingency Table Analysis (recommended)

STAT 8262 Nonparametric Inference (recommended)

STAT 6214 Applied Linear Models (recommended)

STAT 6207 Methods of Statistical Computing I

STAT 6208 Methods of Statistical Computing II

STAT 6215 Applied Multivariate Analysis I

STAT 6216 Applied Multivariate Analysis II

STAT 6217 Design of Experiments

STAT 6218 Linear Models

STAT 6223 Bayesian Statistics: Theory and Applications

STAT 6242 Regression Graphics/Nonparametric Regression

STAT 6287 Modern Theory of Sample Surveys

STAT 6289 Topics in Statistics

STAT 8257 Probability

STAT 8258 Distribution Theory

STAT 8263 Advanced Statistical Theory I

STAT 8264 Advanced Statistical Theory II

STAT 8265 Multivariate Analysis

STAT 8273 Stochastic Processes I

STAT 8274 Stochastic Processes II

STAT 8281 Advanced Time Series Analysis

STAT 8288 Modern Theory/Sample Surveys

BIOS 8998 Advanced Reading and Research (see advisor)

Approved public health elective courses:

PUBH 6242 ClinicalEpid&Decision Analysis (recommended)

PUBH 6245 InfectiousDisease Epidemiology

PUBH 8419 Measrmnt/PubHlth&HlthSrvcsRes

Consulting

Note: May be waived by the Biostatistics Program Director, based on written documentation of prior equivalent course work or relevant work experience. Waiver of the consulting course increases the total number of electives by the number of consulting credits waived

PUBH 6258 Adv Topics/Biostat Consulting

PUBH 6283 Biostatistics Consulting Practicum

Dissertation research:

12-24 credits of the following:

BIOS 8999 Dissertation Research

General and final examinations

The General Examination is given in two parts:

- Part I, is a written comprehensive examination based on the course content of STAT 6202 Mathematical Statistics II STAT 6213 Intermediate Probability and Stochastic Processes (administered by faculty of the Department of Statistics), and PUBH 6266 Biostatistical Methods (administered by the faculty of the Department of Epidemiology and Biostatistics). Students are expected to take the comprehensive examination within 24 months from the date of enrollment in the program. In addition, students are required to make up any deficiencies prior to taking the examination, e.g., by enrolling in appropriate master's-level courses as needed. A student who fails to pass the comprehensive examination may, with the approval of the faculty, repeat the examination the following year. Failure on the second attempt will result in termination from the Ph.D. program.
- Part II, the research proposal, consists of an oral examination based on a written dissertation research proposal. As soon as feasible after successful completion of the comprehensive exam, students are encouraged to identify a dissertation advisor and a topic of research. The written dissertation proposal is then submitted to the student's Dissertation Research Committee, and the student will make an oral presentation of his or her proposal to the Committee. The Committee will determine the student's readiness to pursue and successfully complete the proposed research, in

addition to the appropriateness of the specific problem for dissertation level research.

Upon successful completion of the required course work and both parts of the General Examination, the candidate will generally be recommended to the Associate Dean for Graduate Affairs of The Columbian College of Arts and Sciences (CCAS) for promotion to PhD Candidacy: the dissertation research. A candidate must file an approved dissertation research plan with the CCAS before being admitted to PhD Candidacy. Prior to completion of the General Examination, a student may register for at most 6 credit hours of BIOS 8999 Dissertation Research.

Consult with the Biostatistics Program Director or Academic Advisor for the dissertation guidelines.

Professional enhancement requirement (8 hours)

Professional enhancement activities supplement the academic curriculum and help prepare students to participate actively in the professional community. They enhance practical knowledge and awareness of public health issues – either in general or in a student's specific area of study.

Students can fulfill this requirement by attending workshops, seminars, or other relevant professional meetings, which are often held at SPH and in the metropolitan Washington, DC area. Examples of conference sponsors include the National Academy for State Health Policy, the Pan American Health Organization, the American Public Health Association, the American College of Healthcare Executives, the Area Health Education Center, the American College of Sports Medicine, and the National Athletic Trainer's Association. Opportunities for professional enhancement are regularly publicized via the SPH Listserv and through your department or advisor.

Students must submit documentation of Professional Enhancement activities to the Biostatistics Academic Advisor, which includes a prior approval, a description of the program agenda, and proof of attendance before applying for graduation.

DOCTOR OF PHILOSOPHY IN THE FIELD OF EPIDEMIOLOGY

Program Director S. Cleary

The purpose of the PhD program is to prepare students for a career in epidemiologic research in an academic or industry setting. The PhD graduate is expected to have knowledge across a wider range of epidemiologic theories and methods and specific knowledge of the epidemiology of one of the following areas: chronic disease, infectious disease, environmental and occupational health.

Doctoral students are required to pass a written comprehensive examination and to complete a dissertation. For the

comprehensive examination the student must demonstrate advanced knowledge of epidemiologic and biostatistical methods. For the dissertation, the student must design and execute an original research study that contributes new knowledge to the field and demonstrates proficiency using advanced analytic methods.

In addition to MS and MPH competencies, doctoral students in epidemiology must demonstrate competencies in the following areas: demonstrate understanding of general and specialized advanced epidemiologic concepts, develop a research protocol, conduct and analyze a research study, and disseminate research findings.

At the completion of the doctoral program in epidemiology students will be able to:

- Demonstrate understanding of general and specialized epidemiologic concepts: Demonstrate knowledge of advanced epidemiologic concepts with specialized knowledge in a specific area of epidemiology (e.g., methods, infectious diseases, chronic diseases, environmental, or occupational); apply knowledge of disease pathogenesis to a study protocol; discuss major public health problems; and exhibit knowledge of ethical issues in research.
- Develop a research protocol: Synthesize, identify gaps and/or limitations of published research and present appropriate hypotheses to address gaps; develop a research protocol including identification of data sources, evaluate appropriate instruments for data collection, the advantages and disadvantages of different epidemiologic study designs and sources of potential bias.
- Conducting and analyzing data from a research study: Demonstrate proficiency in data collection, data cleaning, primary or secondary data analysis, summarizing statistical analyses and results, and evaluating potential for bias.
- Dissemination of research findings: Provide a structured proposal of a research study including the background, study hypotheses, design, methodology, and contribution to the field; communicate dissertation results to lay and scientific communities through presentations at conferences and publications in the peer-reviewed literature.

Admissions Requirements

Specific admission requirements are shown on the Graduate Program Finder (<http://www.gwu.edu/all-graduate-programs>)

Applicants must hold an undergraduate degree from an accredited institution of higher learning. Applicants should have academic backgrounds of excellence, usually with majors, or equivalent, in the fields in which they intend to study for advanced degrees. Normally, a B average (or equivalent) from an accredited college is required. With evidence of special promise, such as high Graduate Record Examination scores, an applicant whose academic record falls short of a B average may be accepted on a conditional basis. Meeting the minimum requirements does not assure acceptance. The departments

may, and often do, set higher admission standards. Moreover, the number of spaces available for new graduate students limits the number who can be accepted. Students who apply in their senior year must provide evidence of the completion of their baccalaureate work before registration in SPH is permitted. Applicants should be aware that graduate courses taken prior to admission while in non-degree status are not used in assessing admissibility to degree programs and may not be transferable into those programs. The Program-at-a-Glance presents the Ph.D. curriculum for students admitted to the Ph.D. program with no intermediate Master's degree.

If desired, a student may complete the M.S. or M.P.H. program prior to admission to the Ph.D. degree program, in which case no more than 24 credits from the M.S. degree may be applied to the Ph.D. course work requirements. In this instance the student will be required to take a minimum of 27 additional credits of course work. The distribution of these courses between epidemiology and statistics will depend on the nature of the Master's degree and whether the transferred credits would be used to defray epidemiology or statistics course work. All applications are submitted through SOPHAS.org (<http://SOPHAS.org>).

For reporting GRE general test scores use the following institutional code: 5268.

COMPETENCIES

At the completion of the doctoral program in epidemiology students will be able to:

- Demonstrate understanding of general and specialized epidemiologic concepts.
- Demonstrate knowledge of advanced epidemiologic concepts with specialized knowledge in a specific area of epidemiology (e.g., methods, infectious diseases, chronic diseases, environmental, or occupational); apply knowledge of disease pathogenesis to a study protocol; discuss major public health problems; and exhibit knowledge of ethical issues in research.
- Develop a research protocol: Synthesize, identify gaps and/or limitations of published research and present appropriate hypotheses to address gaps; develop a research protocol including identification of data sources, evaluate appropriate instruments for data collection, the advantages and disadvantages of different epidemiologic study designs and sources of potential bias.
- Conducting and analyzing data from a research study: Demonstrate proficiency in data collection, data cleaning, primary or secondary data analysis, summarizing statistical analyses and results, and evaluating potential for bias.
- Dissemination of research findings: Provide a structured proposal of a research study including the background, study hypotheses, design, methodology, and contribution to the field; communicate dissertation results to lay and

scientific communities through presentations at conferences and publications in the peer-reviewed literature.

REQUIREMENTS - PLAN A

Specific admission requirements are shown on the Graduate Program Finder (<http://www.gwu.edu/all-graduate-programs>)

Prerequisite courses for admissions:

BISC 1111	Introductory Biology: Cells and Molecules
BISC 1112	Introductory Biology: The Biology of Organisms
MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
MATH 2233	Multivariable Calculus

These courses (or equivalents) MUST appear on your transcript.

Additional course requirements

MATH 2184	Linear Algebra I
STAT 2183	Statistical Computing Packages
or PUBH 6249	StatPackages/DataMgt&DataAnlys
Applicants lacking these courses (or equivalents) will be considered for admission, but, if admissible, will be admitted conditionally with the expectation that these courses will be satisfactorily completed within two semesters following matriculation in the program. These credits do not count as credit toward the 72-credit graduation requirement, nor are grades earned in these courses reflected in the overall grade point average.	

Program Requirements (Plan A)

Required core courses:

18 credits of public health core courses:	
PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods
PUBH 8419	Measrmnt/PublHlth&HlthSrvcsRes
Select one of the following options:	

Option A:

PUBH 6299	Topics in Epi/Bio (elective courses - 2 credits)
PUBH 6004	Env/Occ Hlth-Sustainable World
or PUBH 6007	Social&BehaviorAppr-Pub.Hlth
Option B:	
PUBH 6299	Topics in Epi/Bio (elective course - 1 credit)
PUBH 6006	Mgt & Policy Approaches to PH
15 credits of statistics core courses:	
STAT 6201	Mathematical Statistics I
STAT 6202	Mathematical Statistics II
STAT 6210	Data Analysis
PUBH 8365	Design of Medical Studies
PUBH 8366	Biostatistical Methods (basis for PhD general comprehensive)
A minimum of 15 public health elective courses:	
PUBH 6299	Topics in Epi/Bio
PUBH 6123	Toxicology: Applic for PH Pol
PUBH 6124	Problem Solving in EOH
PUBH 6242	ClinicalEpid&Decision Analysis *
PUBH 6244	Cancer Epidemiology *
PUBH 6245	InfectiousDisease Epidemiology ²
PUBH 6250	Epidemiology of HIV/AIDS *
PUBH 6259	Epid Surveillance/PublicHealth
PUBH 8242	DPH Topics:ClinEpi&DecAnalysis
PUBH 8244	DPH Topics:Cancer Epidemiology
PUBH 8245	DPH Topics:InfectDiseaseEpi
PUBH 8250	DPH Topics: Epi of HIV/AIDS
Approved statistics elective courses:	
STAT 6227	Survival Analysis
STAT 6231	Contingency Table Analysis
STAT 6207	Methods of Statistical Computing I
STAT 6208	Methods of Statistical Computing II

STAT 6213	Intermediate Probability and Stochastic Processes
STAT 6215	Applied Multivariate Analysis I
STAT 6216	Applied Multivariate Analysis II
STAT 6217	Design of Experiments
STAT 6218	Linear Models
STAT 6223	Bayesian Statistics: Theory and Applications
STAT 8226	Advanced Biostatistical Methods
STAT 8262	Nonparametric Inference
STAT 8263	Advanced Statistical Theory I
STAT 8265	Multivariate Analysis
STAT 8273	Stochastic Processes I
STAT 8274	Stochastic Processes II

3 credits of consulting

Note: May be waived by the Epidemiology Program Director, based on written documentation of prior equivalent course work or relevant work experience. Waiver of the consulting course increases the total number of electives by the number of consulting credits waived

PUBH 6258	Adv Topics/Biostat Consulting
PUBH 6283	Biostatistics Consulting Practicum

Dissertation Research

12-21 credits of the following:

PUBH 8999	Dissertation Research (taken in units of 3 credits)
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Graduation Requirements

1. Program options: Students may choose either curriculum Plan A or curriculum Plan B for the Doctor of Philosophy degree in the field of epidemiology.
2. Graduate credit requirement: 72 graduate credits are required.
3. Prerequisites: Review official program guide for minimum prerequisite requirements for admission.
4. Comprehensive (General) exam
 - a. A written comprehensive exam will be administered within 24 months from date of matriculation based on the course content of PUBH 6247 Design of Health Studies, PUBH 6252 Advanced Epidemiology Methods, and PUBH 8419 Measrmnt/

PubHlth&HlthSrvcsRes. The exam is administered once per year in August.

- b. An oral presentation of the proposal for dissertation is made to the students' Dissertation Research Committee. The Committee will determine the student's readiness to pursue and complete the proposed research.

5. Dissertation: 12-21 credits of dissertation research are required. Students may register for up to 6 credits of PUBH 8999 Dissertation Research prior to completion of the proposal defense.
6. Grade point requirements: An overall GPA of 3.0 (B average) is required.
7. Time limit requirement: The degree must be completed 8 years.
8. Transfer credit policy: Up to 24 credits from an applicable masters program may be approved to be transferred to the doctoral program. Credits must have been earned from an accredited institution with a grade point average of B or better.

The General Examinations

Part I is a written comprehensive examination consisting of one examination in the field of biostatistics and one in the field of epidemiology. The epidemiology examination is based on the course content of PUBH 6247 Design of Health Studies, PUBH 6252 Advanced Epidemiology Methods, and PUBH 8419 Measrmnt/PubHlth&HlthSrvcsRes as well as the biostatistics examination is based on the course content of PUBH 8366 Biostatistical Methods and is administered by the faculty of the Department of Epidemiology & Biostatistics. Students are expected to take the comprehensive examination within 24 months from the date of enrollment in the program. In addition, students are required to make up any deficiencies prior to taking the examination, e.g., by enrolling in appropriate master's-level courses as needed. The doctoral comprehensive examination is administered once per year in late August. A student who fails to pass the comprehensive examination may, with the approval of the faculty, repeat all or portions of the examination. Failure on the second attempt will result in termination from the Ph.D. program.

Part II, the research proposal, consists of an oral examination based on a written dissertation research proposal. As soon as feasible after successful completion of the comprehensive exam, students are encouraged to identify a dissertation advisor and a topic of research. The written dissertation proposal is then submitted to the student's Dissertation Research Committee, and the student will make an oral presentation of his or her proposal to the Committee. The Committee will determine the student's readiness to pursue and successfully complete the proposed research, in addition to the appropriateness of the specific problem for dissertation level research.

Upon successful completion of the required course work and both parts of the General Examination, the candidate will generally be recommended for promotion to PhD Candidacy: the dissertation research. Prior to completion of the General examination, a student may register for at most 6 credit hours of PUBH 8999 Dissertation Research.

Professional Enhancement Requirement (Two Days)

Professional enhancement activities supplement the academic curriculum and help prepare students to participate actively in the professional community. They enhance practical knowledge and awareness of public health issues – either in general or in a student’s specific area of study.

Students can fulfill this requirement by attending workshops, seminars, or other relevant professional meetings, which are often held at SPH and in the metropolitan Washington, DC area. Examples of conference sponsors include the National Academy for State Health Policy, the Pan American Health Organization, the American Public Health Association, the American College of Healthcare Executives, the Area Health Education Center, the American College of Sports Medicine, and the National Athletic Trainer’s Association. Opportunities for professional enhancement are regularly publicized via the SPH Listserv and through your department or advisor. It is hoped that PhD students will fulfill one day of this two day requirement by participating in a poster presentation at GWUMC Research Day.

Students must submit documentation of Professional Enhancement activities to the Epidemiology Program Director, which includes a prior approval, a description of the program agenda, and proof of attendance before applying for graduation.

REQUIREMENTS - PLAN B

Specific admission requirements are shown on the Graduate Program Finder

Minimum Prerequisite Courses for Admission Consideration (or equivalents to these GW courses)

The courses listed below (or equivalents) are prerequisites for admission consideration, and MUST appear on your transcript. Submit your PhD Epidemiology program admission application only after you have completed all of the following courses:

Prerequisite courses for admissions:	
BISC 1111	Introductory Biology: Cells and Molecules
BISC 1112	Introductory Biology: The Biology of Organisms
MATH 1231	Single-Variable Calculus I

MATH 1232	Single-Variable Calculus II
The courses listed below (or equivalents) MUST appear on your transcript.	

The courses listed below are “Additional Course Requirements.”

Additional course requirements	
MATH 2184	Linear Algebra I
STAT 2183	Statistical Computing Packages
or PUBH 6249	StatPackages/DataMgt&DataAnlys
Applicants lacking these courses (or equivalents) will be considered for admission, but, if admissible, will be admitted conditionally with the expectation that these courses will be satisfactorily completed within two semesters following matriculation in the program. These credits do not count as credit toward the 72 credit graduation requirement, nor are grades earned in these additional courses reflected in the overall grade point average.	

Program Requirements (Plan B)

Required core courses:	
18 credits of public health core courses:	
PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods
PUBH 8419	Measrmnt/PubHlth&HlthSrvcRes
One of the following options:	
Option A	
PUBH 6299	Topics in Epi/Bio (elective courses - 2 credits)
PUBH 6004	Env/Occ Hlth-Sustainable World
or PUBH 6007	Social&BehaviorAppr-Pub.Hlth
Option B	
PUBH 6299	Topics in Epi/Bio (elective courses - 1 credit)
PUBH 6006	Mgt & Policy Approaches to PH
12 credits of statistics core courses:	
PUBH 8364	Quantitative Methods

STAT 6210	Data Analysis
PUBH 8365	Design of Medical Studies
PUBH 8366	Biostatistical Methods (basis for PhD general comprehensive)
A minimum of 18 credits of public health elective courses:	
PUBH 6299	Topics in Epi/Bio
PUBH 6123	Toxicology: Applic for PH Pol
PUBH 6124	Problem Solving in EOH
PUBH 6242	ClinicalEpid&Decision Analysis *
PUBH 6244	Cancer Epidemiology *
PUBH 6245	InfectiousDisease Epidemiology *
PUBH 6250	Epidemiology of HIV/AIDS *
PUBH 6252	Advanced Epidemiology Methods
PUBH 6259	Epid Surveillance/PublicHealth
PUBH 8242	DPH Topics:ClinEpi&DecAnalysis
Approved statistics elective courses:	
PUBH 8244	DPH Topics:Cancer Epidemiology
PUBH 8245	DPH Topics:InfectDiseaseEpi
STAT 6227	Survival Analysis
STAT 6231	Contingency Table Analysis
STAT 6207	Methods of Statistical Computing I
STAT 6208	Methods of Statistical Computing II
STAT 6213	Intermediate Probability and Stochastic Processes
STAT 6215	Applied Multivariate Analysis I
STAT 6216	Applied Multivariate Analysis II
STAT 6217	Design of Experiments
STAT 6218	Linear Models
STAT 6223	Bayesian Statistics: Theory and Applications
STAT 8226	Advanced Biostatistical Methods
STAT 8262	Nonparametric Inference
STAT 8263	Advanced Statistical Theory I

STAT 8265	Multivariate Analysis
STAT 8273	Stochastic Processes I
STAT 8274	Stochastic Processes II
3 credits of consulting:	
Note: May be waived by the Epidemiology Program Director, based on written documentation of prior equivalent course work or relevant work experience. Waiver of the consulting course increases the total number of electives by the number of consulting credits waived.	
PUBH 6299	Topics in Epi/Bio
PUBH 6258	Adv Topics/Biostat Consulting
Dissertation research:	
12-21 credits of the following:	
PUBH 8999	Dissertation Research (taken in units of 3 credits)
PUBH 6283	Biostatistics Consulting Practicum

Graduation Requirements

1. Program options: Students may choose either curriculum Plan A or curriculum Plan B for the Doctor of Philosophy degree in the field of epidemiology.
2. Graduate credit requirement: 72 graduate credits are required.
3. Prerequisites: Review official program guide for minimum prerequisite requirements for admission.
4. Comprehensive (General) exam
 - a. A written comprehensive exam will be administered within 24 months from date of matriculation based on the course content of PUBH 6247 Design of Health Studies, PUBH 6252 Advanced Epidemiology Methods, and PUBH 8419 Measrmnt/ PublHlth&HlthSrvcsRes. The exam is administered once per year in August.
 - b. An oral presentation of the proposal for dissertation is made to the students' Dissertation Research Committee. The Committee will determine the student's readiness to pursue and complete the proposed research.
5. Dissertation: 12-21 credits of dissertation research are required. Students may register for up to 6 credits of PUBH 8999 Dissertation Research prior to completion of the proposal defense.
6. Grade point requirements: An overall GPA of 3.0 (B average) is required.
7. Time limit requirement: The degree must be completed 8 years.

8. Transfer credit policy: Up to 24 credits from an applicable masters program may be approved to be transferred to the doctoral program. Credits must have been earned from an accredited institution with a grade point average of B or better.

The General Examinations

Part I is a written comprehensive examination consisting of one examination in the field of biostatistics and one in the field of epidemiology. The epidemiology examination is based on the course content of PUBH 6247 Design of Health Studies, PUBH 6252 Advanced Epidemiology Methods, and PUBH 8419 Measrmnt/PubHlth&HlthSrvcsRes as well as the biostatistics examination is based on the course content of PUBH 8366 Biostatistical Methods and is administered by the faculty of the Department of Epidemiology & Biostatistics. Students are expected to take the comprehensive examination within 24 months from the date of enrollment in the program. In addition, students are required to make up any deficiencies prior to taking the examination, e.g., by enrolling in appropriate master's-level courses as needed. The doctoral comprehensive examination is administered once per year in late August. A student who fails to pass the comprehensive examination may, with the approval of the faculty, repeat all or portions of the examination. Failure on the second attempt will result in termination from the Ph.D. program.

Part II, the research proposal, consists of an oral examination based on a written dissertation research proposal. As soon as feasible after successful completion of the comprehensive exam, students are encouraged to identify a dissertation advisor and a topic of research. The written dissertation proposal is then submitted to the student's Dissertation Research Committee, and the student will make an oral presentation of his or her proposal to the Committee. The Committee will determine the student's readiness to pursue and successfully complete the proposed research, in addition to the appropriateness of the specific problem for dissertation level research.

Upon successful completion of the required course work and both parts of the General Examination, the candidate will generally be recommended for promotion to PhD Candidacy: the dissertation research. Prior to completion of the General Examination, a student may register for at most 6 credit hours of Dissertation Research (PUBH 8999 Dissertation Research).

Professional Enhancement Requirement (Two Days)

Professional enhancement activities supplement the academic curriculum and help prepare students to participate actively in the professional community. They enhance practical knowledge and awareness of public health issues – either in general or in a student's specific area of study.

Students can fulfill this requirement by attending workshops, seminars, or other relevant professional meetings, which are

often held at SPH and in the metropolitan Washington, DC area. Examples of conference sponsors include the National Academy for State Health Policy, the Pan American Health Organization, the American Public Health Association, the American College of Healthcare Executives, the Area Health Education Center, the American College of Sports Medicine, and the National Athletic Trainer's Association. Opportunities for professional enhancement are regularly publicized via the SPH Listserv and through your department or advisor. It is hoped that PhD students will fulfill one day of this two day requirement by participating in a poster presentation at GWUMC Research Day.

Students must submit documentation of Professional Enhancement activities to the Epidemiology Program Director, which includes a prior approval, a description of the program agenda, and proof of attendance before applying for graduation.

EXERCISE AND NUTRITION SCIENCES

As the only school of public health with a Department of Exercise and Nutrition Sciences, we give students the opportunity to learn not only how exercise, physical activity and nutrition affect the individual, but also how they impact the health and function of communities at large. We provide our students with research and practice opportunities in settings as diverse as the National Institutes of Health, professional sports team, the US Department of Agriculture, the Pentagon, and the DC public school system. Whether your career goal is to influence public health policy, to train elite athletes, or to become a health care provider, we can get you there.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in exercise science (p. 220)
- Bachelor of Science with a major in exercise science, pre-medical professional concentration (p. 224)
- Bachelor of Science with a major in exercise science, pre-physical therapy concentration (p. 225)
- Bachelor of Science with a major in exercise science, pre-dietetics concentration (p. 222)
- Bachelor of Science with a major in exercise science, pre-athletic training/sports medicine concentration (p. 221)

Minors

- Minor in exercise science (p. 226)
- Minor in health and wellness (p. 226)
- Minor in nutrition (p. 227)

GRADUATE

Master's programs

- Master of Public Health in the field of physical activity in public health (p. 227)
- Master of Public Health in the field of public health nutrition (p. 229)
- Master of Science in the field of exercise science with a concentration in strength and conditioning (p. 234)
- Master of Science in the field of exercise science with a concentration in clinical exercise physiology (p. 232)

FACULTY

Professors J.V. Danoff, J.A. DeLoia, L. DiPietro (*Chair*) , L.F. Hamm

Associate Professors T. A. Miller, A. Visek, B.J. Westerman

Assistant Professors M. Barron, G.M. Hudson

BACHELOR OF SCIENCE WITH A MAJOR IN EXERCISE SCIENCE

Program Advisor and Director B. Westerman

The Bachelor of Science with a major in exercise science prepares individuals for careers in medicine and other health related professions including athletic training/sports medicine, physical therapy, physician's assistant or nursing, dietetics, exercise physiology and rehabilitation, sport psychology as well as fitness and health promotion.

Students in the exercise science major may select the pre-medical professional concentration (for those planning to enter a medical, physician assistant, or nursing program upon graduation), the pre-physical therapy concentration, the pre-dietetics concentration, or the pre-athletic training/sports medicine concentration. The exercise science major may also be taken without a concentration.

REQUIREMENTS

All students accepted to the Bachelor of Science with a major in the field of exercise science must complete 124 credits and maintain a minimum grade point average of 2.5.

The following requirements must be fulfilled:

The general curriculum requirements for exercise science students (as stated in the general education tab)

Required core courses in exercise science:

Students must earn a grade of C- or better in all core exercise science required courses.

EXSC 1103	Professional Foundations in Exercise Science
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EXSC 1110	Applied Anatomy Physiology I-II
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EXSC 1111	Applied Anatomy Physiology I-II
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EXSC 2110	Prevntn & Care of Injury
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EXSC 2111	Exercise Physiology I
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EXSC 2112	Exercise Physiology II
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EXSC 2113	Kinesiology
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EXSC 2114	Nutrition Sciences I
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EXSC 2115	Nutrition Sciences II
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EXSC 2116	Exercise and Health Psychology
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EXSC 4110	Current Issues in Exercise Science
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EXSC 3110	Internship (two sites)
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29 credits of electives planned with academic advisor

GENERAL EDUCATION

General Curriculum Requirement (GCR) Courses

University Writing (4 credits)

UW 1020	University Writing
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Statistics (3 credits)

STAT 1053	Introduction to Statistics in Social Science
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Math (3 credits)

MATH 1220	Calculus with Precalculus I (or above)
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Biological Science (8 credits)

BISC 1111	Introductory Biology: Cells and Molecules
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BISC 1112	Introductory Biology: The Biology of Organisms
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Chemistry (8 credits)

CHEM 1111	General Chemistry I
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CHEM 1112	General Chemistry II
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Psychology (3 credits)

PSYC 1001	General Psychology
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Communications (3 credits)

SPHR 1011	Voice and Diction
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- or COMM 1040 Public Communication
- or COMM 1041 Interpersonal Communication
- or COMM 1042 Business and Professional Speaking

Social and Behavioral Science (6 credits)

6 credit hours of approved courses from: Anthropology (except biological anthropology), communication, economics, geography, linguistics, media and public affairs, political science, psychology, speech and hearing, sociology (including human services)

Humanities (6 credits)

6 credit hours of approved courses from: American studies, classical studies, literatures in English, foreign literatures in their original language and in translation, history (including history and appreciation of art, dance, music, film and theatre), humanities, philosophy (except logic), religion, peace studies, and women's studies.

Public Health (3 credits)

- PUBH 1101 Intro/Pub Health & Health Svcs
- or PUBH 2110 Public Health Biology
- or PUBH 2111 Introduction to Preventive Medicine

Writing in the Discipline (WID)

Two WID courses; these may also be counted in another category

BACHELOR OF SCIENCE WITH A MAJOR IN EXERCISE SCIENCE, PRE-ATHLETIC TRAINING/SPORTS MEDICINE

Program Advisor and Director B. Westerman

The Bachelor of Science with a major in exercise science prepares individuals for careers in medicine and other health related professions including athletic training/sports medicine, physical therapy, physician's assistant or nursing, dietetics, exercise physiology and rehabilitation, sport psychology as well as fitness and health promotion.

Students in the exercise science major may select the pre-medical professional concentration (for those planning to enter a medical, physician assistant, or nursing program upon graduation), the pre-physical therapy concentration, the pre-dietetics concentration, or the pre-athletic training/sports medicine concentration. The exercise science major may also be taken without a concentration.

REQUIREMENTS

Students must complete 124 credits with a grade point average of 2.5 or above.

The following requirements must be fulfilled:

The general curriculum requirements for Exercise Science students (as stated in the general education tab)

53 credits of general curriculum courses

Requirements for the major:

41 credits of exercise science core courses (students must earn a grade of C- or better in these courses)

EXSC 1103	Professional Foundations in Exercise Science
EXSC 1110	Applied Anatomy Physiology I-II
EXSC 1111	Applied Anatomy Physiology I-II
EXSC 2110	Prevntn & Care of Injury
EXSC 2111	Exercise Physiology I
EXSC 2112	Exercise Physiology II
EXSC 2113	Kinesiology
EXSC 2114	Nutrition Sciences I
EXSC 2115	Nutrition Sciences II
EXSC 2116	Exercise and Health Psychology
EXSC 3110	Internship
EXSC 4110	Current Issues in Exercise Science

Requirements for the concentration:

22 credits of pre-athletic training/sports medicine courses:

EXSC 2121	Orthopaedic Taping and Bracing
EXSC 3117	Injury Assessment
EXSC 3118	Therapeutic Modalities in Sports Medicine
EXSC 3119	Therapeutic Exercise in Sports Medicine
EXSC 3121	Medical Issues in Sports Med
EXSC 3123W	Psych of Injury & Performance
EXSC 3125	Athletic Training Practicum

9 credits of electives planned with advisor

GENERAL EDUCATION

General Curriculum Requirement (GCR) Courses

University Writing (4 credits)

UW 1020 University Writing

Statistics (3 credits)

STAT 1053 Introduction to Statistics in Social Science

Math (3 credits)

MATH 1220 Calculus with Precalculus I (or above)

Biological Science (8 credits)

BISC 1111 Introductory Biology: Cells and Molecules

BISC 1112 Introductory Biology: The Biology of Organisms

Chemistry (8 credits)

CHEM 1111 General Chemistry I

CHEM 1112 General Chemistry II

Psychology (3 credits)

PSYC 1001 General Psychology

Communications (3 credits)

SPHR 1011 Voice and Diction

or COMM 1040 Public Communication

or COMM 1041 Interpersonal Communication

or COMM 1042 Business and Professional Speaking

Social and Behavioral Science (6 credits)

6 credit hours of approved courses from: Anthropology (except biological anthropology), communication, economics, geography, linguistics, media and public affairs, political science, psychology, speech and hearing, sociology (including human services)

Humanities (6 credits)

6 credit hours of approved courses from: American studies, classical studies, literatures in English, foreign literatures in their original language and in translation, history (including history and appreciation of art, dance, music, film and theatre), humanities, philosophy (except logic), religion, peace studies, and women's studies.

Public Health (3 credits)

PUBH 1101 Intro/Pub Health & Health Svcs

or PUBH 2110 Public Health Biology

or PUBH 2111 Introduction to Preventive Medicine

Writing in the Discipline (WID)

Two WID courses; these may also be counted in another category

BACHELOR OF SCIENCE WITH A MAJOR IN EXERCISE SCIENCE, PRE-DIETETICS CONCENTRATION

Program Advisor and Director B. Westerman

Background

The Milken Institute School of Public Health (SPH) first offered the BS Exercise Science fall semester 1997. SPH was established in July 1997, bringing together three long-standing University programs, and is fully accredited by the Council on Education for Public Health (CEPH). The school educates over 800 students at the undergraduate, graduate, and doctoral levels, and with seven academic departments and four research centers. Since its inception, SPH has offered several undergraduate degrees and programs, including the Bachelor of Science in Exercise Science, the Bachelor of Science in Athletic Training, the Bachelor of Science in Public Health, the minor in Exercise Science, the minor in Public Health, and the Concentration in Global Public Health in conjunction with the Elliott School of International Affairs. To learn more visit the SPH website (<http://sphhs.gwu.edu>).

REQUIREMENTS

Students must complete 124 credit hours and maintain a grade point average of at least 2.5. Students completing the pre-dietetics track must complete an accredited coordinated graduate degree after graduating with their Bachelor of Science degree to be eligible to sit for the National Registered Dietitian exam.

The following requirements must be fulfilled:

The general curriculum requirements for exercise science students (as stated in the general education tab)

53 credits of general curriculum courses

Required for the major:

42 credits of exercise science core courses including: (students must earn a grade of C- or better in these core courses)

EXSC 1103 Professional Foundations in Exercise Science

EXSC 1110	Applied Anatomy Physiology I-II
EXSC 1111	Applied Anatomy Physiology I-II
EXSC 2110	Prevntn & Care of Injury
EXSC 2111	Exercise Physiology I
EXSC 2112	Exercise Physiology II
EXSC 2113	Kinesiology
EXSC 2114	Nutrition Sciences I
EXSC 2115	Nutrition Sciences II
EXSC 2116	Exercise and Health Psychology
EXSC 4110	Current Issues in Exercise Science
EXSC 3110	Internship

Requirements for the pre-dietetic concentration:

18 credits of the following:

CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II
BIOC/BISC 3261	Introductory Medical Biochemistry
BIOC/BISC/CHEM 3262	Biochemistry Laboratory
SOC 1001	Introduction to Sociology
BISC 2337	Introductory Microbiology

11 credits of electives planned with advisor

GENERAL EDUCATION

General Curriculum Requirement (GCR) Courses

University Writing (4 credits)	
UW 1020	University Writing
Statistics (3 credits)	
STAT 1053	Introduction to Statistics in Social Science
Math (3 credits)	
MATH 1220	Calculus with Precalculus I (or above)
Biological Science (8 credits)	

BISC 1111 Introductory Biology: Cells and Molecules

BISC 1112 Introductory Biology: The Biology of Organisms

Chemistry (8 credits)

CHEM 1111 General Chemistry I

CHEM 1112 General Chemistry II

Psychology (3 credits)

PSYC 1001 General Psychology

Communications (3 credits)

SPHR 1011 Voice and Diction

or COMM 1040 Public Communication

or COMM 1041 Interpersonal Communication

or COMM 1042 Business and Professional Speaking

Social and Behavioral Science (6 credits)

6 credit hours of approved courses from: Anthropology (except biological anthropology), communication, economics, geography, linguistics, media and public affairs, political science, psychology, speech and hearing, sociology (including human services)

Humanities (6 credits)

6 credit hours of approved courses from: American studies, classical studies, literatures in English, foreign literatures in their original language and in translation, history (including history and appreciation of art, dance, music, film and theatre), humanities, philosophy (except logic), religion, peace studies, and women's studies.

Public Health (3 credits)

PUBH 1101 Intro/Pub Health & Health Svcs

or PUBH 2110 Public Health Biology

or PUBH 2111 Introduction to Preventive Medicine

Writing in the Discipline (WID)

Two WID courses; these may also be counted in another category

BACHELOR OF SCIENCE WITH A MAJOR IN EXERCISE SCIENCE, PRE-MEDICAL PROFESSIONAL CONCENTRATION

Program Advisor and Director B. Westerman

The Bachelor of Science with a major in exercise science prepares individuals for careers in medicine and other health related professions including athletic training/sports medicine, physical therapy, physician's assistant or nursing, dietetics, exercise physiology and rehabilitation, sport psychology as well as fitness and health promotion.

Students in the exercise science major may select the pre-medical professional concentration (for those planning to enter a medical, physician assistant, or nursing program upon graduation), the pre-physical therapy concentration, the pre-dietetics concentration, or the pre-athletic training/sports medicine concentration. The exercise science major may also be taken without a concentration.

REQUIREMENTS

Students must complete 124 credits with a grade point average of at least 2.5.

The following requirements must be fulfilled:

The general curriculum requirements for exercise science students (as stated in the general education tab)

53 credits of general education requirements

Required core exercise science courses:

42 credits of core courses including: (students must earn a grade of C- or higher to receive credit)

EXSC 1103	Professional Foundations in Exercise Science
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EXSC 1110	Applied Anatomy Physiology I-II
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EXSC 1111	Applied Anatomy Physiology I-II
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EXSC 2110	Prevntn & Care of Injury
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EXSC 2111	Exercise Physiology I
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EXSC 2112	Exercise Physiology II
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EXSC 2113	Kinesiology
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EXSC 2114	Nutrition Sciences I
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EXSC 2115	Nutrition Sciences II
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EXSC 2116	Exercise and Health Psychology
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EXSC 4110	Current Issues in Exercise Science
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EXSC 3110	Internship
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Required courses for the pre-medical professional concentration:

20 credits including the following:

CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I
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CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II
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PHYS 1011	General Physics I
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PHYS 1012	General Physics II
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EXSC 3117	Injury Assessment
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9 credits of electives planned with advisor

GENERAL EDUCATION

General Curriculum Requirement (GCR) Courses

University Writing (4 credits)

UW 1020	University Writing
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Statistics (3 credits)

STAT 1053	Introduction to Statistics in Social Science
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Math (3 credits)

MATH 1220	Calculus with Precalculus I (or above)
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Biological Science (8 credits)

BISC 1111	Introductory Biology: Cells and Molecules
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BISC 1112	Introductory Biology: The Biology of Organisms
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Chemistry (8 credits)

CHEM 1111	General Chemistry I
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CHEM 1112	General Chemistry II
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Psychology (3 credits)

PSYC 1001	General Psychology
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Communications (3 credits)

SPHR 1011	Voice and Diction
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- or COMM 1040 Public Communication
- or COMM 1041 Interpersonal Communication
- or COMM 1042 Business and Professional Speaking

Social and Behavioral Science (6 credits)

6 credit hours of approved courses from: Anthropology (except biological anthropology), communication, economics, geography, linguistics, media and public affairs, political science, psychology, speech and hearing, sociology (including human services)

Humanities (6 credits)

6 credit hours of approved courses from: American studies, classical studies, literatures in English, foreign literatures in their original language and in translation, history (including history and appreciation of art, dance, music, film and theatre), humanities, philosophy (except logic), religion, peace studies, and women's studies.

Public Health (3 credits)

- PUBH 1101 Intro/Pub Health & Health Svcs
- or PUBH 2110 Public Health Biology
- or PUBH 2111 Introduction to Preventive Medicine

Writing in the Discipline (WID)

Two WID courses; these may also be counted in another category

BACHELOR OF SCIENCE WITH A MAJOR IN EXERCISE SCIENCE, PRE-PHYSICAL THERAPY CONCENTRATION

Program Advisor and Director B. Westerman

The Bachelor of Science with a major in exercise science prepares individuals for careers in medicine and other health related professions including athletic training/sports medicine, physical therapy, physician's assistant or nursing, dietetics, exercise physiology and rehabilitation, sport psychology as well as fitness and health promotion.

Students in the exercise science major may select the pre-medical professional concentration (for those planning to enter a medical, physician assistant, or nursing program upon graduation), the pre-physical therapy concentration, the pre-dietetics concentration, or the pre-athletic training/sports medicine concentration. The exercise science major may also be taken without a concentration.

REQUIREMENTS

The following requirements must be fulfilled:

The general education requirements listed under the general education tab

124 credits with a minimum grade point average of 2.5

Required courses

53 credits of general education

42 credits of core exercise science courses: (a grade of C- or better must be earned in all core courses)

EXSC 1103	Professional Foundations in Exercise Science
EXSC 1110	Applied Anatomy Physiology I-II
EXSC 1111	Applied Anatomy Physiology I-II
EXSC 2110	Prevntn & Care of Injury
EXSC 2111	Exercise Physiology I
EXSC 2112	Exercise Physiology II
EXSC 2113	Kinesiology
EXSC 2114	Nutrition Sciences I
EXSC 2115	Nutrition Sciences II
EXSC 2116	Exercise and Health Psychology
EXSC 4110	Current Issues in Exercise Science
EXSC 3110	Internship (two sites)

20 credits of pre-physical therapy concentration courses:

PHYS 1011	General Physics I
PHYS 1012	General Physics II
EXSC 3117	Injury Assessment
EXSC 3118	Therapeutic Modalities in Sports Medicine
EXSC 3119	Therapeutic Exercise in Sports Medicine

9 elective credits planned with advisor

GENERAL EDUCATION

General Curriculum Requirement (GCR) Courses

University Writing (4 credits)

UW 1020	University Writing
Statistics (3 credits)	
STAT 1053	Introduction to Statistics in Social Science
Math (3 credits)	
MATH 1220	Calculus with Precalculus I (or above)
Biological Science (8 credits)	
BISC 1111	Introductory Biology: Cells and Molecules
BISC 1112	Introductory Biology: The Biology of Organisms
Chemistry (8 credits)	
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
Psychology (3 credits)	
PSYC 1001	General Psychology
Communications (3 credits)	
SPHR 1011	Voice and Diction
or COMM 1040	Public Communication
or COMM 1041	Interpersonal Communication
or COMM 1042	Business and Professional Speaking
Social and Behavioral Science (6 credits)	
6 credit hours of approved courses from: Anthropology (except biological anthropology), communication, economics, geography, linguistics, media and public affairs, political science, psychology, speech and hearing, sociology (including human services)	
Humanities (6 credits)	
6 credit hours of approved courses from: American studies, classical studies, literatures in English, foreign literatures in their original language and in translation, history (including history and appreciation of art, dance, music, film and theatre), humanities, philosophy (except logic), religion, peace studies, and women's studies.	
Public Health (3 credits)	
PUBH 1101	Intro/Pub Health & Health Svcs
or PUBH 2110	Public Health Biology
or PUBH 2111	Introduction to Preventive Medicine

Writing in the Discipline (WID)

Two WID courses; these may also be counted in another category

MINOR IN EXERCISE SCIENCE REQUIREMENTS

Requirements:

15 credits of required courses:

EXSC 1103 Professional Foundations in Exercise Science

EXSC 1110 Applied Anatomy Physiology I-II

EXSC 1111 Applied Anatomy Physiology I-II

EXSC 2111 Exercise Physiology I

3-4 credits of electives selected from the following:

EXSC 1118 Sport and Nutrition

EXSC 2110 Prevntn & Care of Injury

EXSC 2112 Exercise Physiology II

EXSC 2113 Kinesiology

EXSC 2114 Nutrition Sciences I

EXSC 2116 Exercise and Health Psychology

EXSC 2119 Basic Nutrition

MINOR IN HEALTH AND WELLNESS

REQUIREMENTS

Advisors B. Westerman, A. Dickman

Required courses:

HLWL 1117 Functional Fitness

HLWL 1116 Lifestyle Nutrition

9 credits of elective courses selected from the following:

HLWL 1102 Stress Management

HLWL 1103 Issues in Men's Health

HLWL 1104 Outdoor and Environmental Education

HLWL 1105 Yoga & the Meaning of Life

HLWL 1106	Drug Awareness
HLWL 1108	Weight and Society
HLWL 1109	Human Sexuality
HLWL 1110	Issues in Alternative Medicine
HLWL 1111	Sport and the Law
HLWL 1112	Issues in Women's Health
HLWL 1114	Personal Health and Wellness
EXSC 1112	Current Issues in Coaching
EXSC 1114	Community Nutrition
EXSC 1117	Principles of Coaching
EXSC 1118	Sport and Nutrition
EXSC 1119W	Children and Sport
EXSC 2117W	Sport Psychology
EXSC 2119	Basic Nutrition
EXSC 2122	Food Systems in Public Health

MINOR IN NUTRITION

REQUIREMENTS

The requirements for the minor in nutrition:

Required courses:

EXSC 1114	Community Nutrition
EXSC 1118	Sport and Nutrition
EXSC 2114	Nutrition Sciences I
EXSC 2115	Nutrition Sciences II
EXSC 2122	Food Systems in Public Health

MASTER OF PUBLIC HEALTH IN THE FIELD OF PHYSICAL ACTIVITY IN PUBLIC HEALTH

Program Director L. DiPietro

Practicum Director A. Dickman

Mission Statement

The sedentary lifestyle and its consequent metabolic and cardiovascular complications now assumes a considerable public health burden in the United States. *Indeed, the*

promotion of physical activity for people of all ages has become a top priority on public health agenda around the world. The mission of the Master of Public Health (MPH) degree from the Department of Exercise and Nutrition Sciences is to develop and train graduate students to integrate physical activity into the core of public health practice. The program encompasses an ecological perspective to the role of physical activity in the etiology, prevention and treatment of chronic disease at the community, national, and global levels. Further, this program is designed to train students as public health scientists and practitioners in order to assist public and private agencies with program development and evaluation with regard to physical activity, health promotion and disease prevention.

Goals

The goals of this MPH program in the Department of Exercise and Nutrition Sciences are to ensure graduates:

- Understand the pathophysiology of selected chronic disease processes;
- Understand exercise physiology and the role of physical activity and exercise in health promotion and disease prevention;
- Develop skills in physical activity assessment using state-of-the-art technology;
- Utilize epidemiological methods to develop and test hypotheses pertaining to physical activity and health and disease outcomes at the population level;
- Develop skills in designing, implementing, and evaluating interventions for improving physical activity at the community level;
- Appreciate the role of public health policy in altering physical activity patterns at the community level.

COMPETENCIES

Program Specific Competencies

Upon completion of the MPH in Physical Activity in Public Health, students will possess the following functional competencies:

- Integrate physical activity within the core functions of public health.
Students will be able to describe how the promotion of an active lifestyle can be accomplished within the various disciplines of public health.

Relevant courses:

EXSC 6208	PhysActivity:Phys&Epidemiol
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- Apply evidence-based knowledge and understanding of the relation of physical activity to health and function across the life-span.
Students will be able to describe the role of physical activity in the health and function of the general population.
Students will be able to describe various physiological

and psychosocial mechanisms that mediate the relation between physical inactivity and chronic disease morbidity and mortality.

Relevant courses:

EXSC 6202	Adv Exercise Physiology I
EXSC 6203	Adv Exercise Physiology II
EXSC 6208	PhysActivity:Phys&Epidemiol
EXSC 6212	EX in Selected ChronicDiseases

- Utilize social and behavioral theories in physical activity and other health promotion programs. Students will be able to understand and to apply various theories of social and behavioral change in understanding physical activity adoption and maintenance. Students will demonstrate skills in the design of physical activity interventions that are consistent with the social and behavioral theories.

Relevant courses:

EXSC 6208	PhysActivity:Phys&Epidemiol
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
PUBH 6503	Intro to PubHlth Commnctn&Mktg

- Evaluate the impact of physical activity and sedentary behavior at the community level. Students will be able to use ecological methods to evaluate the association between patterns of physical activity and sedentary living within a community and various pediatric and adult indicators of health in that same community. Students will be able to describe ways of altering the built environment of a given community in order to promote more active living.

Relevant courses:

EXSC 6208	PhysActivity:Phys&Epidemiol
PUBH 6252	Advanced Epidemiology Methods
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms

- Design, implement, and evaluate physical activity interventions in a variety of age groups and community settings. Students will understand the various dimensions of physical activity and their specific relevance to the health needs of different age groups. Students will apply their knowledge of intervention design and implementation to promote physical activity in the school, workplace, community, and home setting. Students will apply their knowledge of social and

behavior changes, as well as their skills in biostatistics and epidemiology, to evaluate the success of their interventions.

Relevant courses:

PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms

- Work with other public health professionals to promote physical activity research, practice, and policy at the community, state, or federal level. Students will apply their competencies from the above-referenced list to integrate the science and practice of public health in working with a variety of traditional and non-traditional public health partners.

Relevant courses:

PUBH 6503	Intro to PubHlth Commnctn&Mktg
EXSC 6208	PhysActivity:Phys&Epidemiol
EXSC 6212	EX in Selected ChronicDiseases

REQUIREMENTS

Course Requirements

All GW SPH, MPH students who select the Physical Activity in Public Health program enroll in Core Courses (15 credits), Program-Specific Courses (20 credits), and Electives (6 credits). Program-Specific Courses include options to focus in Epidemiology, or Program Design and Evaluation. The 45 credit degree program also includes a Practicum (2 credits) and a Culminating Experience (2 credits). The curriculum sheets that follow describe the requirements for the MPH in Physical Activity.

Program Requirements

Prerequisites:

EXSC 2111	Exercise Physiology I
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Required core courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
Required department courses:	
EXSC 6202	Adv Exercise Physiology I
EXSC 6203	Adv Exercise Physiology II
EXSC 6208	PhysActivity:Phys&Epidemiol
EXSC 6212	EX in Selected ChronicDiseases
Required program-specific courses:	
Select Option A or B	
Option A: Epidemiology option	
PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
Option B: Program design and evaluation option	
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Eval-HlthPromDiseasePrevPgrms
PUBH 6502	Practical Data Analysis: PCH
PUBH 6503	Intro to PubHlth Commnctn&Mktg
Sample electives:	
6 elective credits (5 credits in EXSC or PUBH):	
EXSC 6242	Nutrition Across the Lifespan
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6262	Intro-Geog Information Systems
PUBH 6536	Workplace Health Promotion
PUBH 6556	Maternal & Child Nutrition
PUBH 6560	School Health and Safety
Practicum and culminating experience courses:	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.

2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF PUBLIC HEALTH NUTRITION

Program Director K. Robien

Practicum Director A. Dickman

Mission

The mission of the MPH program in Public Health Nutrition at the Milken Institute SPH is to develop and train graduate students to integrate nutrition into the core of public health practice. The program encompasses a social ecological perspective to the role of nutrition in the etiology, prevention and treatment of both acute and chronic disease at the individual, community, national and global levels. This program is designed to train students as public health scientists and practitioners in order to assist public and private agencies with program development, implementation and evaluation with regard to nutrition in health promotion and disease prevention.

Goals

The goals of this MPH program in Public Health Nutrition are to that ensure graduates:

- Understand the pathophysiology of common acute and chronic disease processes and the role that nutrition may play in the development of these diseases.
- Understand the factors impacting the accessibility, availability, adequacy and safety of the food and water systems serving a community, and the relationship between community food and water systems and health outcomes.
- Develop skills in nutrition assessment of both individuals and communities.
- Utilize appropriate epidemiologic methods for developing and testing hypotheses relating to nutrition and health outcomes at the population level.
- Develop skills in designing, implementing, and evaluating nutrition interventions to improve the health of communities.
- Appreciate the role of public health policy in altering the food environment at the community level.

Program-Specific Competencies

Upon completion of the MPH in Public Health Nutrition, students will possess the following functional competencies:

- Integrate nutrition within the core functions of public health. Students will be able to translate nutrition research into public health practice through application of skills in nutrition assessment/surveillance, program planning and evaluation, management, education and health promotion, public policy, and health communication.

Relevant courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6610	Public Health Nutrition Practice and Leadership

- Describe the international and US public health nutrition system. Students will be familiar with the governmental structures and processes involved in the development of public policy, legislation, regulations and delivery of services that influence food intake, nutritional status, and health of populations. Students will be familiar with international, federal, state and local level nutrition surveillance and assistance programs. Students will be able to identify the political, economic and social processes that influence food and nutrition policies and legislation.

Relevant courses:

PUBH 6610	Public Health Nutrition Practice and Leadership
PUBH 6613	US Food Politics and Policy
PUBH 6482	Int'l Food and Nutrition

- Assess the nutritional status of individuals and communities. Students will have the skills to select and use appropriate and current methods to assess nutrition status and prioritize nutritional problems of target populations across the life span. Examples might include anthropometric, biochemical, clinical, dietary, functional (e.g. physical mobility or feeding skills), environmental and socioeconomic assessment. Students will understand the process, rationale, and issues related to establishing nutrient requirements and dietary recommendations

Relevant courses:

PUBH 6611	Nutrition Assessment
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- Evaluate the accessibility, adequacy and safety of the food and water systems for a given community, and understand how these factors could affect the desired outcomes of health promotion and disease prevention activities. Students will be able to identify potential environmental, economic, behavioral, political, cultural and historical factors that impact the food system (including the production, processing, distribution, and consumption of food) and water supply. Students will also have the skills to implement or advocate for improvements in the food and water supply chain as needed to improve the health of the communities they serve.

Relevant courses:

PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6485	Prev&Cont of Water&Sanit. Dis.
PUBH 6612	Food and Water Systems in Public Health

- Apply evidence-based knowledge and understanding of the relationship between nutrition and health outcomes across the life-span. Students will be able to describe the role of nutrition in the health of the general population. Students can identify the health consequences of both under- and over-nutrition. Students will be able to identify and critically evaluate relevant nutrition research, and apply research findings to food and nutrition programs and policies.

Relevant courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
EXSC 6242	Nutrition Across the Lifespan

- Design, implement, and evaluate population-based nutrition interventions, policies, and programs. Students will be able to apply the principles of community assessment, planning, marketing, implementation and evaluation in order to assure the success of food and nutrition interventions. Students will understand and apply theories of social and behavioral change when developing nutrition interventions.

Relevant courses:

PUBH 6007	Social&BehaviorAppr-Pub.Hlth
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PUBH 6305	Fundamentals for Health Policy
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms

- Demonstrate effective communication, management and leadership skills to ensure the success of public health nutrition programs and services. Students will have the skills to communicate food and nutrition information appropriate for broad and diverse audiences, including individuals, families, communities, health professionals, media, policy and decision makers, food industries, and businesses. Students will interact sensitively, effectively and professionally with persons from diverse cultural, socioeconomic, educational, and professional backgrounds, and with persons of all ages and lifestyle preferences.

Relevant courses:

PUBH 6610	Public Health Nutrition Practice and Leadership
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
PUBH 6006	Mgt & Policy Approaches to PH

PUBH 6007	Social&BehaviorAppr-Pub.Hlth
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Required public health nutrition courses:

PUBH 6610	Public Health Nutrition Practice and Leadership
PUBH 6611	Nutrition Assessment
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6612	Food and Water Systems in Public Health
PUBH 6613	US Food Politics and Policy
or PUBH 6482	Int'l Food and Nutrition
EXSC 6242	Nutrition Across the Lifespan
PUBH 6241	Nutritional Epidemiology

Advanced research methods courses:

4 credits from the following:

PUBH 6247	Design of Health Studies
PUBH 6263	Advanced GIS
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods
PUBH 6437	Case Study Methods for Global Health Evaluation
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
PUBH 6530	Qual Methods/Hlth Promotion
PUBH 6534	Comm-Based Participatory Res

Electives:

9 credits. Suggested related courses below:

PUBH 6099	Topics in Public Health (Emerging Zoonotic Diseases and Global Food Production)
PUBH 6099	Topics in Public Health (Systematic Review of the Literature for Public Health)
PUBH 6099	Topics in Public Health (Chronic Disease Epidemiology)

REQUIREMENTS

Course Requirements

Students who do not have an undergraduate degree in nutrition when applying to the Public Health Nutrition MPH program must successfully complete one introductory nutrition and one advanced nutrition or nutritional biochemistry course at the undergraduate level (or higher) with a grade of C or higher prior to matriculating into the program. GW's SPH offers EXSC 2114 Nutrition Sciences I, EXSC 2115 Nutrition Sciences II, and EXSC 2119 Basic Nutrition at the undergraduate level.

Begin Planning Practicum During Year 1; Complete Culminating Experience in Year 2

Program Requirements

Required core courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH

PUBH 6127	Germes: An Introduction to Environmental Health Microbiology
PUBH 6305	Fundamentals for Health Policy
PUBH 6400	Global Health Frameworks
PUBH 6440	GH Econ & Finance
PUBH 6485	Prev&Cont of Water&Sanit. Dis.
PUBH 6503	Intro to PubHlth Commnctn&Mktg
PUBH 6514	Preventing Health Disparities
PUBH 6515	High Risk&Special Populations
PUBH 6550	Maternal & Child Health I
PUBH 6551	Maternal & Child Health II
PUBH 6552	Women's Health
PUBH 6553	Adolescent Health
PUBH 6556	Maternal & Child Nutrition
PUBH 6599	Topics in PCH
EXSC 6202	Adv Exercise Physiology I
EXSC 6203	Adv Exercise Physiology II
EXSC 6208	PhysActivity:Phys&Epidemiol
EXSC 6209	Adv Concepts Nutrition Science
Practicum and culminating experience courses:	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

M.S. IN THE FIELD OF EXERCISE SCIENCE WITH A CONCENTRATION IN CLINICAL EXERCISE PHYSIOLOGY

Program Director L. Hamm

Mission Statement

The mission of the Master of Science (MS) degree in Clinical Exercise Physiology is to develop and train graduate students to understand the disease processes in selected chronic diseases and the proper use of exercise assessment, prescription and training for persons with these chronic diseases and other clinical populations.

Goals

The goals of this program in the Department of Exercise and Nutrition Sciences are to:

- Help students understand the metabolic and physiological aspects of selected disease processes, prevention, and rehabilitation
- Provide students with an in-depth understanding of exercise physiology, clinical exercise assessment, and exercise prescription for disease prevention and rehabilitation
- Provide students with the laboratory and clinical skills necessary for assessing, educating, and treating persons in preventive and rehabilitative exercise programs
- Help students apply principles of exercise testing and prescription in a way that will enhance the quality of life of individuals with chronic disease and/or other special medical considerations
- Facilitate students becoming certified as Clinical Exercise Specialist® with the American College of Sports Medicine

COMPETENCIES

Upon completion of the Master of Science in clinical exercise physiology program, professionals will possess the following functional competencies:

- Skills necessary for the clinical assessment of individuals.

Relevant courses:

EXSC 6202	Adv Exercise Physiology I
EXSC 6203	Adv Exercise Physiology II
EXSC 6209	Adv Concepts Nutrition Science
EXSC 6210	Cardiac Rehabilitation
EXSC 6211	Assessment Prescription & ECG
EXSC 6212	EX in Selected Chronic Diseases

EXSC 6213	Clinical Internship I
EXSC 6214	Clinical Internship II
EXSC 6215	Clinical Exer Physio Rotations

- Skills necessary for conducting exercise tests and other evaluations of individuals with special clinical needs.

Relevant courses:

EXSC 6202	Adv Exercise Physiology I
EXSC 6203	Adv Exercise Physiology II
EXSC 6209	Adv Concepts Nutrition Science
EXSC 6210	Cardiac Rehabilitation
EXSC 6211	Assessment Prescription & ECG
EXSC 6212	EX in Selected ChronicDiseases
EXSC 6213	Clinical Internship I
EXSC 6214	Clinical Internship II
EXSC 6215	Clinical Exer Physio Rotations

- Skills for prescribing preventive and rehabilitative exercise for individuals with special medical needs.

Relevant courses:

EXSC 6202	Adv Exercise Physiology I
EXSC 6203	Adv Exercise Physiology II
EXSC 6207	Psych Aspects Sport & Exercise
EXSC 6209	Adv Concepts Nutrition Science
EXSC 6210	Cardiac Rehabilitation
EXSC 6211	Assessment Prescription & ECG
EXSC 6212	EX in Selected ChronicDiseases
EXSC 6213	Clinical Internship I
EXSC 6214	Clinical Internship II
EXSC 6215	Clinical Exer Physio Rotations

- Administrative and professional skills for working with other health care team members in the clinical setting.

Relevant courses:

EXSC 6208	PhysActivity:Phys&Epidemiol
EXSC 6209	Adv Concepts Nutrition Science

EXSC 6210	Cardiac Rehabilitation
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EXSC 6213	Clinical Internship I
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EXSC 6214	Clinical Internship II
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EXSC 6215	Clinical Exer Physio Rotations
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EXSC 6216	Org&Mgmt of Clinical Programs
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- Skills for managing clinical exercise and wellness programs.

Relevant courses:

EXSC 6202	Adv Exercise Physiology I
EXSC 6203	Adv Exercise Physiology II
EXSC 6209	Adv Concepts Nutrition Science
EXSC 6210	Cardiac Rehabilitation
EXSC 6211	Assessment Prescription & ECG
EXSC 6212	EX in Selected ChronicDiseases
EXSC 6213	Clinical Internship I
EXSC 6214	Clinical Internship II

- Develop the knowledge, skills, and abilities required to successfully complete the American College of Sports Medicine Clinical Exercise Specialist® certification examination.

Relevant courses:

EXSC 6202	Adv Exercise Physiology I
EXSC 6203	Adv Exercise Physiology II
EXSC 6204	Biostatistical Meth&Res Design
EXSC 6207	Psych Aspects Sport & Exercise
EXSC 6209	Adv Concepts Nutrition Science
EXSC 6210	Cardiac Rehabilitation
EXSC 6211	Assessment Prescription & ECG
EXSC 6212	EX in Selected ChronicDiseases

REQUIREMENTS

Course Requirements

All GW Department of Exercise and Nutrition Sciences Master Degree students who enroll in the clinical exercise physiology program must successfully complete requirements of the program. The required 36 credits includes successful completion of the American College of Sports Medicine

Clinical Exercise Specialist® certification examination. This certification examination is typically taken in the last semester of the program.

Program Requirements

Prerequisites:

Exercise physiology - must be completed before beginning coursework at GW

Core courses:

EXSC 6202	Adv Exercise Physiology I
EXSC 6203	Adv Exercise Physiology II
EXSC 6204	Biostatistical Meth&Res Design
EXSC 6207	Psych Aspects Sport & Exercise
EXSC 6208	PhysActivity:Phys&Epidemiol
EXSC 6209	Adv Concepts Nutrition Science

Program-specific courses:

EXSC 6210	Cardiac Rehabilitation
EXSC 6211	Assessment Prescription & ECG
EXSC 6212	EX in Selected ChronicDiseases
EXSC 6215	Clinical Exer Physio Rotations
EXSC 6216	Org&Mgmt of Clinical Programs

Culminating experience:

EXSC 6213	Clinical Internship I
EXSC 6214	Clinical Internship II

Certification exam:

Students must take and pass the American College of Sports Medicine Clinical Exercise Physiologist® Certification Examination

6. Transfer credit policy: up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the MSES. Courses need to have been taken within the past three years from an accredited institution with a grade of B or better.

MASTER OF SCIENCE IN THE FIELD OF EXERCISE SCIENCE WITH A CONCENTRATION IN STRENGTH AND CONDITIONING

Program Director T.A. Miller

Mission Statement

The mission of the this program is to provide formal graduate level academic instruction in the science and theory of resistance training, as well as to promote student production of research that directly relates to the neuromuscular adaptations involved with resistance training.

Goals

The goals of this program in the Department of Exercise and Nutrition Sciences are to:

- Establish scientific basis for the value of anaerobic exercise, and to provide internal and external programs that promote health behaviors across the lifespan.
- Meet an increasing demand for well-educated professional capable of delivering a broad range of exercise-based preventive, technical, educational, and rehabilitative services.
- Gain insight into strategies for the prevention and treatment of sarcopenia, osteoporosis and childhood obesity.
- Provide advanced training in exercise physiology as it relates specifically to resistance training for the purpose of increasing athletic performance and the prevention or treatment of inactivity-related health disorders.
- Prepare students with knowledge and skills to take the Certified Strength and Conditioning Specialist (CSCS) exam offered through the NSCA, and the Level One Weightlifting Coaching Course offered through United States Weightlifting (USAW)

COMPETENCIES

Program-Specific Competencies

Upon completion of the MS Strength and Conditioning program, professionals will possess the following functional competencies:

- Skills necessary for the evaluation and development of resistance training programs that develop and improve neuromuscular function.

Relevant courses:

EXSC 6220	Power Training for Sports Perf
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Graduation requirements

1. Graduate credit requirement: 36 graduate credits are required.
2. Course requirements: successful completion of the core courses and the program specific courses are required.
3. Examination requirement: pass the American College of Sports Medicine Clinical Exercise Specialist® certification examination (clinical exercise physiology only)
4. Grade point requirement: a 3.0 (B average) overall grade point average is required.
5. Time limit requirement: the degree must be completed within four years.

EXSC 6221	Science & Theory of Training
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EXSC 6222	Current Topics in SC
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EXSC 6223	Biomechanical Analysis
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- Skills necessary for the assessment of muscular strength and endurance in athletic and non-athletic populations.

Relevant courses:

EXSC 6202	Adv Exercise Physiology I
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EXSC 6203	Adv Exercise Physiology II
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EXSC 6209	Adv Concepts Nutrition Science
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EXSC 6220	Power Training for Sports Perf
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EXSC 6221	Science & Theory of Training
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EXSC 6222	Current Topics in SC
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- Skills for prescribing therapeutic exercise activities.

Relevant courses:

EXSC 6202	Adv Exercise Physiology I
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EXSC 6203	Adv Exercise Physiology II
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EXSC 6207	Psych Aspects Sport & Exercise
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EXSC 6233	Graduate Internship
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EXSC 6261	Thesis Seminar
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EXSC 6998	Thesis Research
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- Skills necessary for conducting general exercise testing.

Relevant courses:

EXSC 6202	Adv Exercise Physiology I
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EXSC 6203	Adv Exercise Physiology II
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EXSC 6233	Graduate Internship
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EXSC 6998	Thesis Research
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- Administrative and professional skills for working with other health and fitness professionals.

Relevant courses:

EXSC 6204	Biostatistical Meth&Res Design
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EXSC 6207	Psych Aspects Sport & Exercise
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EXSC 6208	PhysActivity:Phys&Epidemiol
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EXSC 6209	Adv Concepts Nutrition Science
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EXSC 6233	Graduate Internship
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EXSC 6998	Thesis Research
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- Skills of conducting exercise science research.

Relevant courses:

EXSC 6202	Adv Exercise Physiology I
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EXSC 6203	Adv Exercise Physiology II
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EXSC 6204	Biostatistical Meth&Res Design
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EXSC 6208	PhysActivity:Phys&Epidemiol
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EXSC 6222	Current Topics in SC
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EXSC 6998	Thesis Research
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REQUIREMENTS

Course Requirements

All GW Department of Exercise Science Master Degree students who select the Strength and Conditioning Program enroll in both Core Courses (18 credits) and Program-Specific Courses (18 credits). The 36 total credit requirement includes a culminating experience consisting of either successful completion of an Oral Research Defense or the Comprehensive Exam.

Program Requirements

Prerequisites

Undergraduate exercise physiology - must be completed prior to beginning coursework at GW

Core courses:

EXSC 6202	Adv Exercise Physiology I
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EXSC 6203	Adv Exercise Physiology II
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EXSC 6204	Biostatistical Meth&Res Design
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EXSC 6207	Psych Aspects Sport & Exercise
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EXSC 6208	PhysActivity:Phys&Epidemiol
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EXSC 6209	Adv Concepts Nutrition Science
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Program specific courses:

EXSC 6220	Power Training for Sports Perf
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EXSC 6221	Science & Theory of Training
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EXSC 6222	Current Topics in SC
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EXSC 6223	Biomechanical Analysis
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Culminating experience:

Select one of the following options:

Option A

EXSC 6261 Thesis Seminar
& EXSC 6998 and Thesis Research

Option B

EXSC 6233 Graduate Internship

Comprehensive exam

Graduation requirements

1. Graduate credit requirement: 36 graduate credits are required.
2. Course requirements: successful completion of the core courses and the program specific courses are required.
3. Examination requirement: pass the American College of Sports Medicine Clinical Exercise Specialist® certification examination (clinical exercise physiology only)
4. Grade point requirement: a 3.0 (B average) overall grade point average is required.
5. Time limit requirement: the degree must be completed within four years.
6. Transfer credit policy: up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the MSES. Courses need to have been taken within the past three years from an accredited institution with a grade of B or better.

GLOBAL HEALTH

The Department of Global Health offers diverse programs of study that prepare students to make a difference in the health of people around the world. With 3 fields of study, a joint degree program with Environmental and Occupational Health, several joint degree programs with other Schools at GW, and over 20 international practicum opportunities, our students have limitless opportunities to examine global health concepts and conduct interdisciplinary research. From our home base in Washington, D.C., you will gain the skills and experience necessary to take on today's most pressing global health challenges.

GRADUATE

Master's programs

- Master of Public Health in the field of global health communication (p. 239)
- Master of Public Health in the field of global health program design, monitoring, and evaluation (p. 245)

- Master of Public Health in the field of global health policy (p. 248)
- Master of Public Health in the field of global environmental health (p. 236)
- Master of Public Health in the field of global health epidemiology (p. 242)

Doctoral program

- Doctor of Public Health in the field of global health (p. 251)

FACULTY

Professors M.C. Ellsberg, J.M. Sherry, L. Simonsen *Research*), J.M. Tielsch (*Chair*), R.J. Waldman

Associate Professors J.F. Sandberg, P. Vigilance

Assistant Professors S. Baird, U. Colon-Ramos, C. Garza (*Visiting*), T. Gurman, C. Huang, S. Mookherji, K. Ndiaye, A. Roess, E. Uretsky,

Adjunct Instructors K. Gamble-Payne, E.A. Migliaccio

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL ENVIRONMENTAL HEALTH

Program Director J. Graham

Practicum Director S. McCormick

Mission

The Mission of the Global Environmental Health MPH program – a joint program between the Departments of Global Health and Environmental and Occupational Health – is to educate individuals who are committed to working in resource-poor settings and applying analytic skills to prevent or mitigate the adverse impact of environmental hazards on human health. The program has a particular focus on traditional environmental health hazards—that is, health risks that are a consequence of a lack of access to clean water, inadequate sanitation, poor hygiene, household air pollution, solid waste disposal, and vector-borne diseases such as malaria.

Goals

Our graduates will hold a multidisciplinary knowledge base and skill set that will provide them a framework for addressing environmental health issues from environmentally mediated disease in the poorest performing regions of the world. They will understand the scientific and cultural foundations of environmental health in order to:

- Assess environmental exposures and understand the effects of these exposures on human health;
- Interpret epidemiologic and other research findings related to global environmental health risks; and
- Assume leadership roles in designing, implementing and evaluating programs that focus on modification of

environmental health-related behaviors at local, regional, national and/or global levels.

COMPETENCIES

Upon completion of the MPH program in global environmental health, students should possess the following functional competencies.

- Assess environmental and occupational hazards using both qualitative and quantitative methods. Students will be able to assess human exposures to environmental and occupational hazards for the purposes of evaluating human health hazards, conducting epidemiological research, and preventing and controlling hazards. Students will be able to address both long-established environmental risk factors, such as unsafe water and air pollution, as well as emerging environmental risks, such as climate change.

Relevant Courses

PUBH 6121	Envrnmntl&OccptnlEpidemiology
PUBH 6126	Assessment&Control/Env Hazards
PUBH 6128	Global Envrnmntl & Occptnl Hlth
PUBH 6131	Applied Data Analysis in EOH
PUBH 6411	Global Health Qualitative Research Methods

- Interpret epidemiologic and other research findings related to global environmental health risks, and assist in designing and conducting research. Students will be able to critically assess existing epidemiologic research, to assist in designing and carrying out appropriate studies for investigating environmental health problems, to conceptualize data analysis to address study goals, and to utilize appropriate approaches to manage and analyze data.

Relevant Courses

PUBH 6121	Envrnmntl&OccptnlEpidemiology
PUBH 6128	Global Envrnmntl & Occptnl Hlth
PUBH 6131	Applied Data Analysis in EOH
PUBH 6411	Global Health Qualitative Research Methods

- Critically analyze relevant information in order to design and implement mitigation measures for environmental and occupational health risks, while also addressing underlying vulnerabilities. Students will be able to synthesize relevant information, including qualitative and quantitative data, for the purposes of designing mitigation strategies to reduce and prevent

environmental and occupational disease and injury. Students should be able to understand and compare the determinants of health in different regions of the world, including the: historical, economic, social and cultural, and political.

Relevant Courses

PUBH 6126	Assessment&Control/Env Hazards
PUBH 6128	Global Envrnmntl & Occptnl Hlth
PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs
PUBH 6400	Global Health Frameworks
PUBH 6411	Global Health Qualitative Research Methods

- Identify ethical issues in environmental health research, policy and practice. Students will be able to discuss how scientific principles and societal values such as equity and environmental justice influence decision-making about environmental and occupational health problems in research, public health practice, policy, and management contexts.

Relevant Courses

PUBH 6121	Envrnmntl&OccptnlEpidemiology
PUBH 6128	Global Envrnmntl & Occptnl Hlth

- Apply the principles of epidemiology, economic and social development, policy and political analysis to the identification, classification and elaboration of global health threats and opportunities at the community, national and international levels. Students will be able assess the global burden of disease through multiple frames, including: natural resources, health economics, infectious and chronic disease, nutrition, unintentional and intentional injury, culture, social and political organization, humanitarian emergencies and international organizations. They will be able to apply different frameworks to the description, analysis and critique of new global health issues; and draw from various authoritative data sources and basic epidemiological, socio-cultural and economic principles to assess and describe the health situation in a given country or major state.

Relevant Courses

PUBH 6400	Global Health Frameworks
PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs

PUBH 6435	Global Health Program Development and Implementation
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- Assess the functions, capacities, management and governance of governmental, international and non-state organizations in the translation of scientific and program evidence to inform public health policy making and strategy development. Students should be able to demonstrate their understanding of the responsibilities, structure, focus and modus operandi of the legislative, advocacy and program evaluation actors in the Washington global health policy arena; their knowledge of the major institutions in the global environmental health field; and how those major institutions work together and independently to influence the direction of global environmental health policy and the shape of programs. Students should also be able to apply this knowledge to the design and analysis of advocacy for policy and programmatic change.

Relevant Courses

PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs
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PUBH 6400	Global Health Frameworks
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PUBH 6435	Global Health Program Development and Implementation
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PUBH 6126	Assessment&Control/Env Hazards
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PUBH 6128	Global Envrnmtl & Occptnl Hlth
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PUBH 6131	Applied Data Analysis in EOH
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Required GH Courses

PUBH 6400	Global Health Frameworks
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PUBH 6411	Global Health Qualitative Research Methods
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PUBH 6435	Global Health Program Development and Implementation
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Electives

9 credits from the following:

PUBH 6123	Toxicology: Applic for PH Pol
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PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs
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PUBH 6125	Intro-Children's Health & Env
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PUBH 6127	Germes: An Introduction to Environmental Health Microbiology
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PUBH 6130	Sustainable Energy & Environmt
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PUBH 6133	Social Dimen Clim Chnge & Hlth
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PUBH 6134	Communication Science for PubH
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PUBH 6262	Intro-Geog Information Systems
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PUBH 6271	Disaster Epidemiology
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PUBH 6435	Global Health Program Development and Implementation
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PUBH 6437	Case Study Methods for Global Health Evaluation
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PUBH 6480	Public Health in Complex Emergencies
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Practicum and Culminating Experience

PUBH 6014	Practicum
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PUBH 6015	Culminating Experience
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REQUIREMENTS

All students who select the global environmental health program enroll in core courses (15 credits), program-specific courses (17 credits), and electives (9 credits). The 45-credit degree program also includes a practicum (2 credits) and a culminating experience (2 credits) where students apply their didactic education in a real world setting.

Program Requirements

Required Core Courses

PUBH 6001	BiologicalConcepts/PublicHlth
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PUBH 6002	Biostatistical Applic for PubH
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PUBH 6003	Prin & Practice/Epidemiology
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PUBH 6004	Env/Occ Hlth-Sustainable World
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PUBH 6006	Mgt & Policy Approaches to PH
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PUBH 6007	Social&BehaviorAppr-Pub.Hlth
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Required EOH Courses

PUBH 6121	Envrnmtl&OccptnlEpidemiology
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Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.

4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL HEALTH COMMUNICATION

Program Directors T. Gurman & K. Ndiaye

Mission

The mission of the MPH in Global Health Communication is to train the next generation of public health professionals engaged in tackling global health issues with direct ties to human behavior. Human behavior is at the core of many of the world's most pressing public health challenges (ie HIV/AIDS, obesity). This MPH program will train professionals to approach the development and evaluation of behavior change communication programs that address the individual- and community-level factors relevant to the particular population and setting.

Goals

Understanding why people do what they do and being able to develop effective ways to get people to change their behavior requires a toolbox filled with a diverse set of skill sets. As a result, the goals of the MPH in Global Health Communication are to teach students the following:

- Recognition of the complexity of behavior change, especially the multiple levels of influence on human behavior
- Ability to apply behavior change and communication theories in the development and evaluation of health communication programs and activities
- Appreciation for the challenges that may arise in addressing behavior change in global settings
- Critical thinking skills necessary to interpret and apply public health literature related to health communication and behavior change in global health settings
- Skills for developing and evaluating health communication interventions in resource-limited settings or for vulnerable populations
- Qualitative and quantitative research methods relevant to health communication
- Knowledge of the various types of stakeholders, including governments, international donors, and local players, that may shape health communication interventions in global settings

- Cultural competency skills necessary to develop programs and work in diverse cultural settings
- Awareness of the benefits and challenges to collaborating with organizations that serve disenfranchised/vulnerable communities

COMPETENCIES

By the end of their MPH program, students should be able to:

- Apply multi-disciplinary perspectives to identify, analyze and address global health challenges.

Relevant courses:

PUBH 6001	Biological Concepts/Public Hlth
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&Behavior Appr-Pub.Hlth
PUBH 6400	Global Health Frameworks
PUBH 6510	COPC Principles and Practice
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6571	Social Mktg: Theory & Practice

- Distinguish between qualitative and quantitative methods and select the appropriate method depending on the specific research or programmatic need.

Relevant courses:

PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods
PUBH 6431	Global Health Communication Strategies and Skills

- Interpret and critique research and best practices to inform the development of evidence-based solutions for global health challenges.

Relevant courses:

PUBH 6003	Prin & Practice/Epidemiology
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6571	Social Mktg: Theory & Practice

- Communicate public health evidence on global health topics to a variety of audiences, such as technical experts, policymakers, lay audiences, and other relevant stakeholders.

Relevant courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6571	Social Mktg: Theory & Practice

- Identify and address the ethical issues of global health programs, policies and research.

Relevant courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6571	Social Mktg: Theory & Practice

- Engage with diverse individuals, organizations, and communities with respect for different values, beliefs and practices.

Relevant courses:

PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
PUBH 6431	Global Health Communication Strategies and Skills

- Explain multilevel determinants of problems in Global Health and the basis for strategies and interventions.

Relevant courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
PUBH 6400	Global Health Frameworks
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6571	Social Mktg: Theory & Practice

- Describe the governance and institutional landscape of global health.

Relevant courses:

PUBH 6400	Global Health Frameworks
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- Demonstrate professionalism in practice, research and in communication activities.

Relevant courses:

PUBH 6410	Global Health Study Design
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills

- Explain the ways in which behavior change and communication theories can inform the development and evaluation of health communication interventions.

Relevant courses:

PUBH 6007	Social&BehaviorAppr-Pub.Hlth
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6571	Social Mktg: Theory & Practice

- Develop logic and conceptual models to design, monitor, and evaluate context-specific health communication interventions.

Relevant courses:

PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6571	Social Mktg: Theory & Practice

- Identify and describe essential components of health communication interventions and strategies, linking theory with practice.

Relevant courses

PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6571	Social Mktg: Theory & Practice

- Evaluate health communication activities and interventions.

Relevant courses:

PUBH 6002	Biostatistical Applic for PubH
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6571	Social Mktg: Theory & Practice

REQUIREMENTS

All Milken Institute School of Public Health (SPH) MPH students who select the Global Health Communication program enroll in Core Courses (15 credits), Department Courses (10 credits), Program-Specific Courses (8 credits), and Electives (7 credits). The total 45 credit degree program also includes a Practicum (2 credits) and a Culminating Experience (2 credits) where students apply their didactic education in a real world setting.

Required Core Courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology

PUBH 6004 Env/Occ Hlth-Sustainable World

PUBH 6006 Mgt & Policy Approaches to PH

PUBH 6007 Social&BehaviorAppr-Pub.Hlth

Required Global Health Departmental Courses:

PUBH 6400 Global Health Frameworks

PUBH 6410 Global Health Study Design

PUBH 6411 Global Health Qualitative Research Methods

PUBH 6412 Global Health Quantitative Research Methods

PUBH 6416 Ethical and Cultural Issues in Global Health Research and Programs

Required Communication Program Courses:

PUBH 6430 Theories for Global Health Communication Interventions

PUBH 6431 Global Health Communication Strategies and Skills

PUBH 6571 Social Mktg: Theory & Practice

Elective Courses:

One from the following:

PUBH 6249 StatPackages/DataMgt&DataAnlys

PUBH 6262 Intro-Geog Information Systems

PUBH 6572 Marketing Rsch for Publ Health

ANTH 6505 Medical Anthropology

PUBH 6502 Practical Data Analysis: PCH

PUBH 6533 Design of Comm Health Surveys

ANTH 6301 The Anthropology of Development

PUBH 6534 Comm-Based Participatory Res

One from the following:

PUBH 6499 Topics in Global Health

PUBH 6435 Global Health Program Development and Implementation

or PUBH 6500 Planning and Implementing Health Promotion Programs

PUBH 6501 Eval-HlthPromDiseasePrevPrgrms

PUBH 6570	AdvPublHlthComm: Theory & Prac
PUBH 6575	CommunSkills for PubHProfsnls
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6515	High Risk&Special Populations
SMPA 6205	Media, Development, and Globalization
PUBH 6574	Pub Hlth Branding Theory&Pract
PUBH 6573	Media Advocacy for Public Hlth
or PUBH 6532	Commnty Org,Devlpmnt&Advocacy
SMPA 6201	Strategic Communications Skills
IAFF 6502 & IAFF 6503	Professional Skills I and Professional Skills II

Any SPH or GWU course(s) with advisor's approval via petition

Practical and Culminating Experience:

PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL HEALTH EPIDEMIOLOGY

***This program is not accepting students in the 2014-15 Academic Year**

Program Co-Directors H. Young, M. Magnus,

Practicum Director L. Simonsen

Mission

The mission of the Global Health Epidemiology Program is to educate graduate students by developing the necessary methodological and quantitative skills to conduct research in an international setting and successfully improve the health and well-being of people around the world. While nurturing students' capacity to think critically and creatively, we strive to deepen their commitment to improving the public's health and to engaging in and promoting public service—qualities we believe are essential for future epidemiologists and public health practitioners.

Goals

The goals of the Global Health Epidemiology Program are to ensure that graduates:

- Identify determinants of health problems including socio-cultural factors;
- Understand and adhere to high scientific standards for research;
- Understand and follow guidelines for ethical treatment of research participants;
- Communicate research findings to a lay audience;
- Assume leadership roles in designing and conducting epidemiologic and intervention research at both national and global levels; and
- Respect cultural diversity throughout all of the above.

COMPETENCIES

Program-Specific Competencies

The Global Health Epidemiology specialization prepares students for epidemiological research and evaluation in a variety of local, national, and international organizations. The curriculum prepares students to design and conduct studies, manage health data, and make leadership decisions in the context of international public health. The following competencies were developed in concert with professors of epidemiology and global health courses, epidemiology textbooks, conversations with prospective employers, and experience in the field.

Upon completion of the MPH in Global Health Epidemiology, students will demonstrate functional competence to:

- Apply the theories and principles of epidemiology, biostatistics, economics and social development to the identification, classification and elaboration of the determinants and distribution of disease and global health threats and opportunities at the community, national and international levels.

Relevant courses:

PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys

PUBH 6252	Advanced Epidemiology Methods
PUBH 6400	Global Health Frameworks
PUBH 6440	GH Econ & Finance

- Assess the functions, capacities, management and governance of governmental, international and non-state organizations in the translation of scientific and program evidence to inform public health policy making and strategy development.

Relevant courses:

PUBH 6400	Global Health Frameworks
PUBH 6401	Comp Regional Determinants
PUBH 6402	Washington Seminar

- Critically analyze global health trends and assess patterns of emerging diseases to postulate hypotheses and to differentiate determinants in order to evaluate the impact of health problems and prioritize approaches based on economic affordability and political feasibility.

Relevant courses:

PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6400	Global Health Frameworks
PUBH 6401	Comp Regional Determinants
PUBH 6440	GH Econ & Finance

- Apply underlying principles and methods including ethical issues involved in the design, planning, and conduct of epidemiologic studies including observational and experimental designs, screening programs, public health surveillance, and other epidemiologic designs in a global health setting.

Relevant courses:

PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6400	Global Health Frameworks

- Identify the appropriate data analysis methods, conduct data management and data analysis using a computerized software program, and interpret the results from epidemiological studies.

Relevant courses:

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods

- Successfully apply public health theory and experiential evidence in the development and management of project, program and institutional strategies capable of reducing health risks, addressing underlying vulnerabilities, and mitigating the impact disease.

Relevant courses:

PUBH 6400	Global Health Frameworks
PUBH 6401	Comp Regional Determinants

- Effectively synthesize data and relevant literature with economic and social arguments to formulate communication strategies in global health action in various professional, institutional, political and cultural settings as well as facilitate the distribution of scientific findings through manuscripts and scientific presentations.

Relevant courses:

PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6400	Global Health Frameworks
PUBH 6401	Comp Regional Determinants

- Evaluate the benefits, costs and effectiveness of global health project, program and policy approaches and interventions through the appropriate choice and application of qualitative and quantitative survey and analysis methods.

Relevant courses:

PUBH 6247	Design of Health Studies
PUBH 6400	Global Health Frameworks
PUBH 6401	Comp Regional Determinants

- Demonstrate their understanding of the fundamental concepts related to the theory of the consumer and production decisions by health care organizations; be able to critically evaluate research findings related to various healthcare markets; and use economic analysis and statistical tools for evaluating problems faced by health care organizations.

Relevant course:

PUBH 6440	GH Econ & Finance
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- Critically assess issues in at least one of the following specialty areas in global health epidemiology:
 - Clinical epidemiology such as decision analysis, cost-effectiveness to clinical and public health problems.
 - Major topics in infectious disease epidemiology
 - Methods and issues of cancer epidemiology
 - Methods and issues of surveillance systems in public health.
 - Qualitative research methods
 - Program design and implementation
 - Major topics in food, water and vector borne diseases and control
 - Advanced quantitative methods

REQUIREMENTS

Course Requirements

Students may not be admitted directly into the Global Health Epidemiology program. Students in either the Epidemiology program or the Global Health program may apply to the Global Health Epidemiology program after they have completed PUBH 6002 Biostatistical Applic for PubH, PUBH 6003 Prin & Practice/Epidemiology, and PUBH 6400 Global Health Frameworks (usually after their first semester). Successful applicants are expected to have earned a minimum of A- in each of these three courses. Students who are interested in this program and intend to complete the MPH in two years will need to register for the above mentioned three courses in their first semester. Students not admitted into the Global Health Epidemiology program will continue in their original program.

All GW School of Public Health and Health Services (SPH) MPH students who are admitted into the MPH Global Health Epidemiology Program enroll in Core Courses (15 credits), Epidemiology Program-Specific Required Courses (9 credits), Global Health Program-Specific Required Courses (9 credits) and Concentration electives (8 credits). The total 45 credit degree program also includes a Practicum (2 credits) and a Culminating Experience (2 credits) where students apply their didactic education in a real world setting.

Program Requirements

Required core courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth

Global Health required program-specific courses:

PUBH 6400	Global Health Frameworks
PUBH 6401	Comp Regional Determinants
PUBH 6402	Washington Seminar
PUBH 6440	GH Econ & Finance

Epidemiology/Biostatistics required program-specific courses:

PUBH 6247	Design of Health Studies
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods

Program elective courses:

8 credits from the following global health and epidemiology/biostatistics courses (other courses may be used with permission of advisor):

Department of Epidemiology and Biostatistics:

PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6244	Cancer Epidemiology
PUBH 6245	InfectiousDisease Epidemiology
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6253	Issues in HIV Care & Treatment
PUBH 6255	Org Responses to HIV/Epidemic
PUBH 6259	Epid Surveillance/PublicHealth
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 6262	Intro-Geog Information Systems
PUBH 6263	Advanced GIS
PUBH 6267	Time Series:Applications in PH
PUBH 6268	Advanced SAS
PUBH 6269	Reproductive Epidemiology

PUBH 6270	HIV/AIDS Surveillance
PUBH 6271	Disaster Epidemiology
PUBH 6272	Infectious Agents- Cancer
PUBH 6273	Ethnographic Methods
PUBH 6274	Emerging ID for PH Pro's

Department of Global Health:

PUBH 6530	Qual Methods/Hlth Promotion
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PUBH 6435	Global Health Program Development and Implementation
PUBH 6442	Comparative Global Health Systems
PUBH 6480	Public Health in Complex Emergencies
PUBH 6481	Global Mental Health
PUBH 6482	Int'l Food and Nutrition
PUBH 6484	Prev&Cont of VectorBorne Dis.
PUBH 6485	Prev&Cont of Water&Sanit. Dis.
PUBH 6499	Topics in Global Health (Advanced Quantitative Methods in Global Health)
Practicum and culminating experience:	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL HEALTH PROGRAM DESIGN, MONITORING, AND EVALUATION

Program Director S. Mookherji

Mission

The mission of the Global Health Design, Monitoring and Evaluation Program is to prepare the next generation of global health professionals to implement and evaluate global health programs and initiatives, to contribute to improved global health program performance, and better decisions and policies for investment of scarce resources for effective program implementation, all based on rigorous evidence, that will

improve the health and well-being of populations in low and middle income settings abroad and within the United States.

Goals

The goals of the Global Health Design, Monitoring and Evaluation Program are to prepare students to be skilled evaluators and practitioners who know how to:

- Utilize the full range of evaluation design options to generate the best evidence on how well a program is working, how it is working, and why
- Work within real-world confines to strengthen methodological rigor of evaluation and program implementation
- Use theory to ground program design, implementation, and evaluation
- Generate and use data for management decision-making;
- Translate evidence into implementation improvements and policy recommendations.

COMPETENCIES

By the end of the MPH, Global Health Program Design, Monitoring, and Evaluation program, students should be able to:

- Apply multi-disciplinary perspectives to identify, analyze and address global health challenges.

Relevant courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
PUBH 6400	Global Health Frameworks
PUBH 6410	Global Health Study Design
PUBH 6435	Global Health Program Development and Implementation

- Distinguish between qualitative and quantitative methods and select the appropriate method depending on the specific research or programmatic need.

Relevant courses:

PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6410	Global Health Study Design

PUBH 6411	Global Health Qualitative Research Methods
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PUBH 6412	Global Health Quantitative Research Methods
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PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
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- Interpret and critique research and best practices to inform the development of evidence-based solutions for global health challenges.

Relevant courses:

PUBH 6003	Prin & Practice/Epidemiology
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PUBH 6007	Social&BehaviorAppr-Pub.Hlth
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PUBH 6400	Global Health Frameworks
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PUBH 6435	Global Health Program Development and Implementation
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PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
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- Communicate public health evidence on global health topics to a variety of audiences, such as technical experts, policymakers, lay audiences, and other relevant stakeholders.

Relevant courses:

PUBH 6001	BiologicalConcepts/PublicHlth
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PUBH 6430	Theories for Global Health Communication Interventions
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PUBH 6435	Global Health Program Development and Implementation
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PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
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- Identify and address the ethical issues of global health programs, policies and research.

Relevant courses:

PUBH 6001	BiologicalConcepts/PublicHlth
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PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
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PUBH 6435	Global Health Program Development and Implementation
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PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
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- Engage with diverse individuals, organizations, and communities with respect for different values, beliefs and practices.

Relevant courses:

PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
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PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
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- Explain multilevel determinants of problems in Global Health and the basis for strategies and interventions.

Relevant courses:

PUBH 6001	BiologicalConcepts/PublicHlth
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PUBH 6004	Env/Occ Hlth-Sustainable World
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PUBH 6006	Mgt & Policy Approaches to PH
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PUBH 6007	Social&BehaviorAppr-Pub.Hlth
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PUBH 6400	Global Health Frameworks
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PUBH 6435	Global Health Program Development and Implementation
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PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
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- Describe the governance and institutional landscape of global health.

Relevant courses:

PUBH 6400	Global Health Frameworks
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- Demonstrate professionalism in practice, research and in communication activities.

Relevant courses:

PUBH 6410	Global Health Study Design
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PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
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PUBH 6435	Global Health Program Development and Implementation
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- Utilize epidemiological data, program theory, programmatic evidence, and health systems and policy contextual information for the design of effective global health interventions and programs, as well as their monitoring and evaluation.

Relevant courses:

PUBH 6400	Global Health Frameworks
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PUBH 6435	Global Health Program Development and Implementation
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PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
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- Compare and select monitoring frameworks and evaluation methods according to specified purposes for each.

Relevant courses:

PUBH 6435	Global Health Program Development and Implementation
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PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
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- Identify frameworks for the design of culturally acceptable and contextually feasible global health interventions and evaluations.

Relevant courses:

PUBH 6435	Global Health Program Development and Implementation
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PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
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- Apply research, leadership, and communication skills to support the design, implementation, evidence and policy cycle.

Relevant courses:

PUBH 6435	Global Health Program Development and Implementation
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PUBH 6436	Global Health Program Mgt
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PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
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PUBH 6410	Global Health Study Design
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PUBH 6411	Global Health Qualitative Research Methods
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PUBH 6412	Global Health Quantitative Research Methods
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PUBH 6411	Global Health Qualitative Research Methods
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PUBH 6412	Global Health Quantitative Research Methods
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PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
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Required program design, monitoring, and evaluation program courses:

PUBH 6435	Global Health Program Development and Implementation
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PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
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PUBH 6436	Global Health Program Mgt
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Elective courses:

4 credits from the following:

PUBH 6437	Case Study Methods for Global Health Evaluation
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PUBH 6440	GH Econ & Finance
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PUBH 6441	Intnat'l Health Organizations
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PUBH 6442	Comparative Global Health Systems
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PUBH 6262	Intro-Geog Information Systems
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PUBH 6263	Advanced GIS
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ANTH 6505	Medical Anthropology
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PUBH 6340	Health Economics and Finance
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PUBH 6352	Basics of Econ for Health Pol
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5 credits from the following:

PUBH 6480	Public Health in Complex Emergencies
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PUBH 6481	Global Mental Health
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PUBH 6482	Int'l Food and Nutrition
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PUBH 6484	Prev&Cont of VectorBorne Dis.
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PUBH 6485	Prev&Cont of Water&Sanit. Dis.
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PUBH 6132	Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs
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PUBH 6250	Epidemiology of HIV/AIDS
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Any SPH or GWU course(s) with advisor's approval via petition

REQUIREMENTS

Required core courses:

PUBH 6001	BiologicalConcepts/PublicHlth
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PUBH 6002	Biostatistical Applic for PubH
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PUBH 6003	Prin & Practice/Epidemiology
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PUBH 6004	Env/Occ Hlth-Sustainable World
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PUBH 6006	Mgt & Policy Approaches to PH
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PUBH 6007	Social&BehaviorAppr-Pub.Hlth
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Required global health departmental courses:

PUBH 6400	Global Health Frameworks
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PUBH 6410	Global Health Study Design
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Practical and culminating experience:

PUBH 6014 Practicum

PUBH 6015 Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL HEALTH POLICY

Program Director J. Tielsch

Mission

The mission of the Global Health Policy Program is to prepare the next generation of global health professionals in the disciplines and perspectives necessary to contribute to the development, implementation, and evaluation of policies at the local, national, regional, and international levels that will improve the health and well-being of underserved populations in low and middle income settings abroad and within the United States.

Goals

The goals of the Global Health Policy Program are to prepare students to:

- Assess the burden and determinants of health problems in an underserved low or middle income population;
- Assess and evaluate the relevant policy issues appropriate to addressing these health problems using a multidisciplinary approach;
- Assume leadership roles in the policy development process with the goal of maximizing the performance and financial integrity of the health system.

COMPETENCIES

By the end of their MPH, Global Health Policy program, students should be able to:

- Apply multi-disciplinary perspectives to identify, analyze and address global health challenges.

Relevant courses:

PUBH 6001 Biological Concepts/Public Hlth

PUBH 6003 Prin & Practice/Epidemiology

PUBH 6004 Env/Occ Hlth-Sustainable World

PUBH 6006 Mgt & Policy Approaches to PH

PUBH 6007 Social&BehaviorAppr-Pub.Hlth

PUBH 6400 Global Health Frameworks

PUBH 6315 Intro-Health Policy Analysis

PUBH 6442 Comparative Global Health Systems

- Distinguish between qualitative and quantitative methods and select the appropriate method depending on the specific research or programmatic need.

Relevant courses:

PUBH 6002 Biostatistical Applic for PubH

PUBH 6003 Prin & Practice/Epidemiology

PUBH 6410 Global Health Study Design

PUBH 6412 Global Health Quantitative Research Methods

- Interpret and critique research and best practices to inform the development of evidence-based solutions for global health challenges.

Relevant courses:

PUBH 6007 Social&BehaviorAppr-Pub.Hlth

PUBH 6003 Prin & Practice/Epidemiology

PUBH 6305 Fundamentals for Health Policy

PUBH 6315 Intro-Health Policy Analysis

PUBH 6442 Comparative Global Health Systems

- Communicate public health evidence on global health topics to a variety of audiences, such as technical experts, policymakers, lay audiences, and other relevant stakeholders.

Relevant courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6305	Fundamentals for Health Policy
PUBH 6315	Intro-Health Policy Analysis
PUBH 6400	Global Health Frameworks

- Identify and address the ethical issues of global health programs, policies and research.

Relevant courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6410	Global Health Study Design
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs

- Engage with diverse individuals, organizations, and communities with respect for different values, beliefs and practices.

Relevant courses:

PUBH 6410	Global Health Study Design
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs

- Explain multilevel determinants of problems in Global Health and the basis for strategies and interventions.

Relevant courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
PUBH 6400	Global Health Frameworks

- Describe the governance and institutional landscape of global health.

Relevant courses:

PUBH 6400	Global Health Frameworks
PUBH 6441	Intnat'l Health Organizations
PUBH 6443	Global Health Agreements and Conventions

- Demonstrate professionalism in practice, research and in communication activities.

Relevant courses:

PUBH 6315	Intro-Health Policy Analysis
PUBH 6410	Global Health Study Design
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
PUBH 6575	CommunSkills for PubHProfsnls

- Apply quantitative and qualitative tools and concepts to develop global health policy analyses for different audiences.

Relevant courses:

PUBH 6305	Fundamentals for Health Policy
PUBH 6315	Intro-Health Policy Analysis
PUBH 6412	Global Health Quantitative Research Methods

- Analyze major multi-institutional and multi-sectoral initiatives in global health and make recommendations from an organizational and financial perspective on how they might be strengthened. ·

Relevant courses:

PUBH 6400	Global Health Frameworks
PUBH 6441	Intnat'l Health Organizations
PUBH 6442	Comparative Global Health Systems

- Describe how health system performance is affected by various approaches to health system organization, financing and workforce development.

Relevant courses:

PUBH 6440	GH Econ & Finance
PUBH 6442	Comparative Global Health Systems

- Assess the historical and ongoing development of international health regulations and intellectual property rights and how they could be addressed through national and international policies. Understand the role they play in controlling a major epidemic or health emergency.

Relevant courses:

PUBH 6441	Intnat'l Health Organizations
PUBH 6443	Global Health Agreements and Conventions

- Assess the relationship between the protection, promotion, and progressive realization of human rights and global health outcomes.

Relevant courses:

PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
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PUBH 6441	Intnat'l Health Organizations
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PUBH 6443	Global Health Agreements and Conventions
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- Describe the economic challenges faced by low and middle-income countries regarding health status of their populations and health care delivery options and how different policy approaches can be used to address these challenges.

Relevant courses:

PUBH 6440	GH Econ & Finance
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PUBH 6442	Comparative Global Health Systems
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PUBH 6412	Global Health Quantitative Research Methods
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PUBH 6440	GH Econ & Finance
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PUBH 6441	Intnat'l Health Organizations
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PUBH 6442	Comparative Global Health Systems
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PUBH 6443	Global Health Agreements and Conventions
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Elective courses:

6 credits from the following:

PUBH 6262	Intro-Geog Information Systems
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PUBH 6435	Global Health Program Development and Implementation
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PUBH 6437	Case Study Methods for Global Health Evaluation
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PUBH 6575	CommunSkills for PubHProfsnls
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PUBH 6482	Int'l Food and Nutrition
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PPPA 6015	Benefit-Cost Analysis
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PPPA 6006	Policy Analysis
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PPPA 6062	Community Development Policy and Management
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IAFF 6198	Special Topics in International Trade and Investment Policy
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IAFF 6158	Special Topics in International Science and Technology Policy
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IAFF 6138	Special Topics in International Development Studies
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Any SPH or GWU course(s) with advisor's approval via petition

Practicum and culminating experience:

PUBH 6014	Practicum
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PUBH 6015	Culminating Experience
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REQUIREMENTS

Course Requirements

All Milken Institute School of Public Health (SPH) MPH students who select the Global Health Communication program enroll in Core Courses (15 credits), Program-Specific Courses (20 credits), and Electives (6 credits). The total 45 credit degree program also includes a Practicum (2 credits) and a Culminating Experience (2 credits) where students apply their didactic education in a real world setting.

Program Requirements

Required core courses:

PUBH 6001	BiologicalConcepts/PublicHlth
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PUBH 6002	Biostatistical Applic for PubH
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PUBH 6003	Prin & Practice/Epidemiology
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PUBH 6004	Env/Occ Hlth-Sustainable World
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PUBH 6006	Mgt & Policy Approaches to PH
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PUBH 6007	Social&BehaviorAppr-Pub.Hlth
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Required program-specific courses:

PUBH 6400	Global Health Frameworks
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PUBH 6410	Global Health Study Design
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PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
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PUBH 6305	Fundamentals for Health Policy
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PUBH 6315	Intro-Health Policy Analysis
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Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.

4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

DOCTOR OF PUBLIC HEALTH IN THE FIELD OF GLOBAL HEALTH

Program Director A. Roess

Mission

The DrPH degree is the terminal degree in the professional discipline of public health. Consistent with this advanced professional orientation, the DrPH Program will prepare future public health leaders to apply critical thinking and rigorous research methods to the complex practical problems facing practitioners and policy-makers in public health practice. The DrPH Program is designed to both follow and promote the principles of academic public health practice. As noted in a recent ASPH publication, public health practice is the strategic, organized, and interdisciplinary application of knowledge, skills, and competencies necessary to perform essential public health services and other activities to improve the populations' health. Academic public health practice is the applied, interdisciplinary pursuit of scholarship in the field of public health. Recent events sharply illustrate the need for public health professionals who can provide the leadership to expand and strengthen the US and global public health systems. The DrPH program is designed to prepare professionals with skills to provide this leadership.

From the combination of course work and the implementation of the knowledge in the context of a thesis project in outstanding international placements, the DrPH degree in Global Health will enable professionals to develop innovative approaches to and ability to negotiate the complex interrelationship between health and political, economic, and human development.

Goals

The DrPH graduate will be prepared to assume an advanced level of leadership in global health, in the context of health research as well as implementation programs in an international setting.

Admissions Requirements

The Doctor of Public Health Program is designed for mid-career professionals seeking to become public health leaders. Applicants who have completed an MPH degree from a Council of Education for Public Health (CEPH) accredited program are strongly preferred for admission to the DrPH Program. Alternatively, applicants with a master's degree in

another field may indicate their relevant training, research experience, or educational background comparable to the MPH. Doctoral applicants admitted without an MPH will be required to take additional course work at the graduate level that does not apply toward the minimum 48 credits required for the DrPH. Qualified applicants with degrees from institutions in foreign countries are also eligible for admission. All applicants must submit scores from the Graduate Record Exam (GRE) taken within five years of the date of application. Because admission to this program is highly selective, successful applicants have competitive academic credentials and substantial prior public health professional work experience related to the specialty field to which they are applying.

Program Policies and Procedures

For program policies and procedures, please refer to the Doctor of Public Health Handbook and other resources located on DrPh in the field of Global Health website (<http://publichealth.gwu.edu/programs/global-health-drph>).

COMPETENCIES

DrPH Core Competencies

The Doctor of Public Health (DrPH) Program prepares professionals to assume national and international leadership positions in environmental and occupational health, global health, health behavior, and health policy. The field of public health provides unique insights into the complex interrelationships between health, politics, and human development. It enables professionals to address public health issues by marshalling research and analytic skills to develop innovative approaches to understand health and to promote and advocate for improved health outcomes. Upon completion of the DrPH, students will demonstrate ability in these core competencies:

- Analyze a public health problem and determine appropriate sources of data and methods for problem identification, program planning, implementation, monitoring, and evaluation.

Relevant Courses

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 8417	Qual Research Methods&Analysis
PUBH 8419	Measrmnt/PubHlth&HlthSrvcsRes

- Develop and analyze hypotheses that can be tested by appropriate quantitative or qualitative research designs and methodologies.

Relevant Courses

PUBH 6247	Design of Health Studies
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PUBH 6252	Advanced Epidemiology Methods
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8422	AdvHlthCare&PublHlthRsrchDes

- Synthesize and evaluate research conducted by others.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8422	AdvHlthCare&PublHlthRsrchDes

- Design strategies to accurately and effectively describe public health, economic, administrative, legal, social, political, and cultural implications of different health policy options.

Relevant Courses

PUBH 6247	Design of Health Studies
PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8417	Qual Research Methods&Analysis
PUBH 8419	Measrmnt/PublHlth&HlthSrvcsRes

- Design grant proposals to address public health problems.

Relevant Courses

PUBH 8416	Study Design & Evaluation Methods
PUBH 8422	AdvHlthCare&PublHlthRsrchDes

- Present public health data and research syntheses to scientific and professional audiences and the public.

Relevant Courses

PUBH 8407	AdvTpc-HlthLdrshp/IntlSettings
PUBH 8422	AdvHlthCare&PublHlthRsrchDes

- Defend the feasibility and expected outcomes of different policy options and transform them into organizations, plans, processes, and programs. Relevant courses:

Relevant Courses

PUBH 6247	Design of Health Studies
PUBH 8402	Ldrshp/PublicHlthPractc&Policy

PUBH 8417	Qual Research Methods&Analysis
PUBH 8422	AdvHlthCare&PublHlthRsrchDes

- Appraise the dynamic forces that contribute to cultural diversity and develop responsive plans and programs.

Relevant Courses

PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods
PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8417	Qual Research Methods&Analysis

- Assess the determinants of health and illness, factors that contribute to health promotion and disease prevention, and factors that influence the use and cost of public health services in a population.

Relevant Courses

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health

- Develop and defend a budget statement that presents programmatic fiscal requirements to achieve stated objectives.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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- Describe the theory of organizational structure and its relation to professional practice.

Relevant Courses

PUBH 6001	BiologicalConcepts/PublicHlth
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- Support a culture of ethical standards of conduct in the research process and within organizations and communities.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8416	Study Design & Evaluation Methods
PUBH 8422	AdvHlthCare&PublHlthRsrchDes

- Lead a team of diverse professionals reflecting shared values and vision to achieve specific objectives.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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Program-Specific Competencies

On completion of the DrPH Program in the field of Global Health, students will possess the following functional competencies and subject area knowledge:

- Apply the theories and principles of epidemiology, economic and social development, and policy analysis to the identification, classification and elaboration of global health threats and opportunities at the community, national and international levels.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8406	AdvTpc-HlthResrch/GlobalArena
PUBH 8407	AdvTpc-HlthLdrshp/IntlSettings
PUBH 8414	Policy/Management Leadership
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8418	Applied Statistical Analysis
PUBH 8419	Measrmnt/PubHlth&HlthSrvcsRes
PUBH 8420	Advanced Analysis & Dissemination
PUBH 8422	AdvHlthCare&PubcHlthRsrchDes
PUBH 8423	Dissertation Research

- Critically assess the functions, capacities, management and governance of governmental, international and non-state organizations in the translation of evidence and the application of scientific research to inform public health policy making and strategy development.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8406	AdvTpc-HlthResrch/GlobalArena
PUBH 8407	AdvTpc-HlthLdrshp/IntlSettings
PUBH 8414	Policy/Management Leadership
PUBH 8416	Study Design & Evaluation Methods
PUBH 8422	AdvHlthCare&PubcHlthRsrchDes
PUBH 8423	Dissertation Research

- Critically analyze complex global health trends, differentiating determinants that can be effectively addressed through technical, behavioral, social and

economic interventions and prioritizing approaches based on economic affordability and political feasibility.

Relevant Courses

PUBH 8406	AdvTpc-HlthResrch/GlobalArena
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8418	Applied Statistical Analysis
PUBH 8419	Measrmnt/PubHlth&HlthSrvcsRes
PUBH 8420	Advanced Analysis & Dissemination
PUBH 8422	AdvHlthCare&PubcHlthRsrchDes
PUBH 8423	Dissertation Research

- Successfully apply public health theory and experiential evidence in the development and management of project, program and institutional strategies capable of reducing risks, addressing underlying vulnerabilities, and mitigating the impacts of the global burden of disease.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8413	Research Leadership
PUBH 8414	Policy/Management Leadership
PUBH 8416	Study Design & Evaluation Methods
PUBH 8422	AdvHlthCare&PubcHlthRsrchDes
PUBH 8423	Dissertation Research

- Effectively synthesize health research findings with economic and social arguments to formulate communication strategies in global health action in various professional, institutional, political and cultural settings.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8407	AdvTpc-HlthLdrshp/IntlSettings
PUBH 8414	Policy/Management Leadership
PUBH 8416	Study Design & Evaluation Methods
PUBH 8422	AdvHlthCare&PubcHlthRsrchDes
PUBH 8423	Dissertation Research

- Evaluate the benefits, costs and effectiveness of global health project, program and policy approaches and

interventions though the appropriate choice and application of qualitative and quantitative survey and analysis methods.

Relevant Courses

PUBH 8406	AdvTpc-HlthResrch/GlobalArena
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8418	Applied Statistical Analysis
PUBH 8420	Advanced Analysis & Dissemination
PUBH 8422	AdvHlthCare&PublHlthRsrchDes
PUBH 8423	Dissertation Research

REQUIREMENTS

Program requirements:

20 credits of required foundational courses and research methods

PUBH 8401	Found PH Leadership & Practice
PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8416	Study Design & Evaluation Methods
PUBH 8418	Applied Statistical Analysis
PUBH 8417	Qual Research Methods&Analysis
PUBH 8419	Measrmnt/PublHlth&HlthSrvcsRes
PUBH 8420	Advanced Analysis & Dissemination

6 credits required global health specialty field courses

PUBH 8406	AdvTpc-HlthResrch/GlobalArena
PUBH 8407	AdvTpc-HlthLdrshp/IntlSettings
Elective specialty field courses (sample list)	

7-10 credits from the following:

PUBH 6123	Toxicology: Applic for PH Pol
PUBH 6128	Global Envrnmtl & Occpntl Hlth
PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6244	Cancer Epidemiology
PUBH 6245	InfectiousDisease Epidemiology
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6259	Epid Surveillance/PublicHealth

PUBH 6262 Intro-Geog Information Systems

PUBH 6263 Advanced GIS

PUBH 6270 HIV/AIDS Surveillance

PUBH 6430 Theories for Global Health Communication Interventions

PUBH 6431 Global Health Communication Strategies and Skills

PUBH 6435 Global Health Program Development and Implementation

PUBH 6440 GH Econ & Finance

PUBH 6441 Intnat'l Health Organizations

PUBH 6442 Comparative Global Health Systems

PUBH 6443 Global Health Agreements and Conventions

PUBH 6481 Global Mental Health

PUBH 6482 Int'l Food and Nutrition

4 credits of professional leadership courses

PUBH 8413 Research Leadership

PUBH 8415 Instructional Leadership

Comprehensive Examination

8-11 credits of dissertation preparation and dissertation

PUBH 8422 AdvHlthCare&PublHlthRsrchDes

Advanced Health Care and Public Health Research Design
prerequisites: Pass Comprehensive Exam, approval of Program Director, & one page abstract

PUBH 8423 Dissertation Research

HEALTH POLICY

The mission of the Department of Health Policy is to serve as an intellectual and practice-oriented community in the Nation's capital dedicated to advancing innovative and effective health policy education, research and service to improve public health and health services domestically and globally. Our Washington, DC location offers unique and exciting opportunities for policy-focused research, practice and experiential learning. You will find our graduates working in Congressional offices and federal agencies, in advocacy and trade associations, in think tanks, in health care systems, and in local, state and global policy organizations as well.

GRADUATE

Master's programs

- Master of Public Health in the field of health policy (p. 255)
- Master of Science in the field of health policy (p. 260)

Doctoral programs

- Doctor of Public Health in the field of health policy (p. 263)
- Doctor of Philosophy in the field of public policy and administration (health policy track) (p. 262)

CERTIFICATE

- Graduate certificate in health policy (p. 261)

FACULTY

University Professor V.N. Gamble

Professors B. Biles, L. Chun-lee Ku, A. Dor, K. Horton (*Research*), P. Lantz (*Chair*), J.W. Levi, F.S.M. Mullan, M.J. Regenstein, J.J. Reum, S. Rosenbaum, J. P. Wisdom

Associate Professors T.L. Burke, L. Cartwright-Smith (*Research*), J. Fischer (*Research*), S.L. Frehywot (*Research*), M.M. Goldstein, R.L. Katz, A.R. Markus, M. McCarthy, P. Pittman, N. Seiler (*Research*), P.W. Shin, A.M. Stewart, J.B. Teitelbaum, J.H. Thorpe, S.F. Wood

Assistant Professors C.P. Chen (*Research*), M. Harty (*Research*), S. Li, K.H. Mead

MASTER OF PUBLIC HEALTH IN THE FIELD OF HEALTH POLICY

Program Director T. Burke

Practicum Directors L. Cartwright-Smith, D. Goetz Goldberg

Mission Statement

The Department of Health Policy of the Milken Institute School of Public Health at the George Washington University is an intellectual and practice-oriented community in the Nation's capital dedicated to advancing innovative and effective health policy education, research, and service to improve public health and health services domestically and globally.

We are committed to:

- offering a cutting-edge, multidisciplinary curriculum that provides students with deep content knowledge and the analytic, communication, and professional skills needed to be the next generation of health policy leaders;
- conducting rigorous multidisciplinary research that addresses significant health challenges, is objective, and is translated to inform and impact health policy and public health practice;
- being a trusted resource for shaping and advancing health policy options because of our research rigor, the real-world

health policy leadership experiences of our faculty and staff, our deep expertise regarding a wide range of policy issues, and our exceptional students;

- leveraging our unique location which allows for strong collaborations with health policy leaders and practitioners in Washington, D.C.;
- improving the health and health care of underserved and vulnerable populations;
- learning from the diversity among our faculty, staff, and students in terms of background, experience, and thought.

Overview

The Department of Health Policy is the home for health policy studies and research at the Milken Institute School of Public Health (SPH). The Department focuses on virtually all facets of U.S. health policy related to both public health and health services, and emphasizes preparing students to understand and analyze health policy matters in a broad, cross-cutting, and real-world context. Among schools of public health, the Milken Institute SPH Department of Health Policy is unique, having been created to take maximum advantage of its location in Washington, DC, the nation's health policy-making epicenter. The MPH in Health Policy is for students who wish to develop in-depth policy analysis skills for use in various practice settings, including both federal and state levels of government, private-sector health policy consulting, and not-for-profit advocacy. Additionally, this program is available to GW law students (the JD/MPH and LLM/MPH programs), lawyers seeking to develop expertise in all facets of health policy and practice, and to GW medical students (the MD/MPH and PA/MPH programs) who wish to enhance their clinical training with a thorough understanding of health policy.

COMPETENCIES

A. Knowledge Domain: Graduates of the program will have a thorough understanding of public health and health care system issues, specifically the following areas:

- The various theories of policymaking and politics.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Pol Analysis
PUBH 6325	Fed Policymaking & Pol Advocacy

- Comparative models of structuring and financing public health activities and health care services, with emphasis on the mechanisms employed in the U.S., including private health insurance, Medicare, Medicaid, managed care, and directly-financed services.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6305	Fundamentals for Health Policy
PUBH 6325	Fed Policymaking &Pol Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law

- The complex systems for delivery of public health and health care services, including facilities, workforce, technology, and the incentives at work in these systems.

Related courses:

PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6305	Fundamentals for Health Policy
PUBH 6320	Advanced Health Pol Analysis
PUBH 6325	Fed Policymaking &Pol Advocacy

- The methods and mechanisms for determining the benefits of public health and health care services, including measures of health outcomes and quality, measuring population health and disparities, public health surveillance, the use of HIT, and issues of privacy and access to data.

Related courses:

PUBH 6003	Prin & Practice/Epidemiology
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
PUBH 6305	Fundamentals for Health Policy
PUBH 6310	Statistical Analysis in Health Policy
PUBH 6320	Advanced Health Pol Analysis
PUBH 6335	Public Health and Law

- The systems and activities in place to provide a safety net for vulnerable populations and reduce health disparities, including community health centers, major federal programs, and public health clinics, and related concepts such as uncompensated care and disparities in access.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
PUBH 6305	Fundamentals for Health Policy
PUBH 6325	Fed Policymaking &Pol Advocacy

PUBH 6330	Health Services and Law
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- The framework of laws and regulations governing public health and health care services, including constitutional rights and limitations, federal and state statutes, regulations, judicial opinions, and other public policy instruments.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6305	Fundamentals for Health Policy
PUBH 6325	Fed Policymaking &Pol Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law

B. Analysis Domain: Graduates of the program will have skills in policy analysis, legal analysis, economic analysis, statistical analysis and population health assessment, and will be able to:

Policy Analysis:

- Locate, assess, appropriately use and synthesize information relevant to key issues in health policy, including evidence related to the legislative, regulatory and judicial processes, peer-reviewed literature, and the "gray literature" produced by think tanks, research organizations, and government agencies.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6305	Fundamentals for Health Policy
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Pol Analysis
PUBH 6325	Fed Policymaking &Pol Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law
PUBH 6340	Health Economics and Finance
PUBH 6014	Practicum

- Understand and critique the research design/methods of different types of applied policy analyses, including program evaluations, cost benefit/cost effectiveness studies, and forecasting/simulation models.

Related courses:

PUBH 6310	Statistical Analysis in Health Policy
PUBH 6315	Intro-Health Policy Analysis

PUBH 6320	Advanced Health Pol Analysis
PUBH 6335	Public Health and Law
PUBH 6340	Health Economics and Finance

- Apply the core elements of a sophisticated policy options analysis to key issues in health care and public health.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Pol Analysis
PUBH 6325	Fed Policymaking &Pol Advocacy
PUBH 6335	Public Health and Law
PUBH 6340	Health Economics and Finance
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

- Design and implement process, impact and economic assessments of health programs and policies that have been implemented.

Related courses:

PUBH 6320	Advanced Health Pol Analysis
PUBH 6325	Fed Policymaking &Pol Advocacy
PUBH 6340	Health Economics and Finance
PUBH 6015	Culminating Experience

Legal Analysis:

- Apply the basic legal rights and responsibilities of relevant stakeholders in the health care and public health systems.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6305	Fundamentals for Health Policy
PUBH 6325	Fed Policymaking &Pol Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law

- Comparatively analyze, interpret, and apply legislation and administrative regulations, judicial rulings, and relevant constitutional law to legal questions pertaining to the health care and public health systems.

Related courses:

PUBH 6325	Fed Policymaking &Pol Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law

Economic Analysis:

- Assess key microeconomic concepts, including supply and demand, markets, taxes and subsidies, public goods and the case for government intervention.

Related courses:

PUBH 6305	Fundamentals for Health Policy
PUBH 6325	Fed Policymaking &Pol Advocacy
PUBH 6335	Public Health and Law
PUBH 6340	Health Economics and Finance

- Apply microeconomic tools in analyses of health care markets, government intervention in markets, the functioning of private/public insurance, and the forecasting of health care utilization and workforce needs.

Related course:

PUBH 6340	Health Economics and Finance
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- Apply models of profit-maximization to health care firms such as hospitals and nursing homes, and appropriate adjustments for the non-profit sector.

Related course:

PUBH 6340	Health Economics and Finance
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- Measure competition and evaluate its consequences in health care delivery, pharmaceutical development, and other markets.

Related courses:

PUBH 6325	Fed Policymaking &Pol Advocacy
PUBH 6340	Health Economics and Finance

Statistical Analysis:

- Access data sets relevant to health policy, including public use data sets.

Related course:

PUBH 6310	Statistical Analysis in Health Policy
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- Analyze, interpret and present univariate and bivariate statistics, such as means and frequencies.

Related courses:

PUBH 6002	Biostatistical Applic for PubH
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PUBH 6310	Statistical Analysis in Health Policy
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- Analyze, interpret and present multivariate statistics, such as regression or logic models.

Related courses:

PUBH 6002	Biostatistical Applic for PubH
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PUBH 6310	Statistical Analysis in Health Policy
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PUBH 6320	Advanced Health Pol Analysis
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- Run basic statistical analyses using a standard statistical software package.

Related courses:

PUBH 6002	Biostatistical Applic for PubH
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PUBH 6310	Statistical Analysis in Health Policy
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Population Health Assessment:

- Identify key sources of population health data.

Related course:

PUBH 6325	Fed Policymaking &Pol Advocacy
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- Apply key indicators of population health and health disparities.

Related courses:

PUBH 6003	Prin & Practice/Epidemiology
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PUBH 6007	Social&BehaviorAppr-Pub.Hlth
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- Describe a public health problem in terms of magnitude, person, time and place.

Related courses:

PUBH 6003	Prin & Practice/Epidemiology
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PUBH 6006	Mgt & Policy Approaches to PH
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PUBH 6320	Advanced Health Pol Analysis
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- Draw appropriate inferences from epidemiologic data.

Related courses:

PUBH 6003	Prin & Practice/Epidemiology
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PUBH 6310	Statistical Analysis in Health Policy
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PUBH 6320	Advanced Health Pol Analysis
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- Calculate basic epidemiology measures.

Related course:

PUBH 6003	Prin & Practice/Epidemiology
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C. Leadership Domain: Graduates of the program will be able to:

- Think creatively to develop and implement innovative policies that effect change and to identify strategies to successfully implement policies.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
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PUBH 6315	Intro-Health Policy Analysis
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PUBH 6320	Advanced Health Pol Analysis
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PUBH 6325	Fed Policymaking &Pol Advocacy
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PUBH 6330	Health Services and Law
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PUBH 6335	Public Health and Law
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PUBH 6014	Practicum
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PUBH 6015	Culminating Experience
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- Work collaboratively with decision-makers, stakeholders, and colleagues with a variety of viewpoints to achieve policy goals.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
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PUBH 6325	Fed Policymaking &Pol Advocacy
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PUBH 6330	Health Services and Law
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PUBH 6335	Public Health and Law
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PUBH 6014	Practicum
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PUBH 6015	Culminating Experience
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- Manage time, resources, and people strategically and effectively to develop and implement policies; demonstrate negotiation and conflict management skills.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
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PUBH 6325	Fed Policymaking &Pol Advocacy
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PUBH 6015	Culminating Experience
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- Motivate and influence others to reach their highest level of effectiveness in the policymaking and implementation process.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6325	Fed Policymaking & Pol Advocacy
PUBH 6015	Culminating Experience

- Adhere to professional ethics while promoting a high standard of personal integrity, compassion, and respect for others. Demonstrate transparency, integrity, and honesty in all actions.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6320	Advanced Health Pol Analysis
PUBH 6325	Fed Policymaking & Pol Advocacy
PUBH 6335	Public Health and Law
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

- Persuade others to support a point of view, position, or recommendation through advocacy.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Pol Analysis
PUBH 6325	Fed Policymaking & Pol Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law
PUBH 6015	Culminating Experience

D. Communication Domain: Graduates of the program will be able to:

- Speak and write clearly and effectively, adapting communication styles and content so they are appropriate to the needs of the intended audience.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6305	Fundamentals for Health Policy

PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Pol Analysis
PUBH 6325	Fed Policymaking & Pol Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

- Convey information and opinions in a structured and credible way.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6305	Fundamentals for Health Policy
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Pol Analysis
PUBH 6325	Fed Policymaking & Pol Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law
PUBH 6015	Culminating Experience

- Encourage others to share their views, and take time to understand and consider these views.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6315	Intro-Health Policy Analysis
PUBH 6325	Fed Policymaking & Pol Advocacy
PUBH 6330	Health Services and Law
PUBH 6335	Public Health and Law

- Ensure that messages have been heard and understood.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6325	Fed Policymaking & Pol Advocacy
PUBH 6335	Public Health and Law

- Keep others informed of key and relevant issues.

Related courses:

PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6315	Intro-Health Policy Analysis
PUBH 6325	Fed Policymaking & Pol Advocacy
PUBH 6335	Public Health and Law

REQUIREMENTS

All MPH students admitted to the Health Policy program enroll in SPH Core Courses (15 credits), Program-Specific Courses (17 credits) and Elective Courses (9 credits). The 45-credit total requirement includes a Practicum (2 credits) in which students apply their didactic education by working for credit for an organization that engages in health policy analysis and a Culminating Experience (2 credits). Students may wish to give greater emphasis to either public health or health services policy as they develop their course of study with their advisor.

Program requirements

Required Core Courses

PUBH 6001	Biological Concepts/Public Hlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth

Required Program-Specific Courses

PUBH 6305	Fundamentals for Health Policy
PUBH 6310	Statistical Analysis in Health Policy
PUBH 6315	Intro-Health Policy Analysis
PUBH 6320	Advanced Health Pol Analysis
PUBH 6325	Fed Policymaking & Pol Advocacy
PUBH 6330	Health Services and Law
or PUBH 6335	Public Health and Law
PUBH 6340	Health Economics and Finance
or PUBH 6242	ClinicalEpid&Decision Analysis

Required Elective Courses

A personalized combination of elective courses.

Practicum and Culminating Experience Courses

PUBH 6014 Practicum

PUBH 6015 Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF SCIENCE IN THE FIELD OF HEALTH POLICY

Program Director H. Mead

Mission Statement

The mission of the Master of Science (MS) degree in Health Policy is to prepare students to enter academic or research careers in health policy. The program prepares candidates for subsequent doctoral study or for research roles in health-delivery systems, regulatory and other government agencies, or university settings. The program emphasizes individual study design and allows students to focus their training in particular areas of health policy (for example, long-term care policy, maternal and child health policy, and health services research and policy). The MS is also suitable as a terminal degree for students, such as physicians in fellowship training, who wish to gain research skills.

COMPETENCIES

Program-Specific Competencies

Graduates of this program will demonstrate functional competence to:

- **Identify the wide-ranging issues that dominate the modern health policy debate at all levels of government.** Students will be able to understand, discuss, and integrate the many complex issues that are the focus of current and past health policy discourse at the federal, state and local levels of government.
- **Demonstrate skills in and familiarity with health policy analysis.** Students will master the mechanics of health

policy analysis and will be able to conduct policy analysis addressing current and past health policy issues to

1. describe the key problem under review;
2. identify relevant background to inform the issue;
3. describe analytically the landscape and context in which the issue occurs;
4. identify meaningful options to address the policy issue; and
5. recommend a course of action.

- **Conduct original health policy analysis and research that uses quantitative and qualitative research methods.**

Students will complete a master's thesis that includes original research on a topic of their choosing. Students will evaluate various qualitative and quantitative methods for their research project and will select one or more methods for the thesis. Students will include in their master's thesis a description of the policy implications of their research.

- **Demonstrate familiarity with the policy making processes that control the development and implementation of health policy.**

Students will develop an understanding of the federal, state and local processes that commonly occur for policy making.

- **Apply policy analysis to key issues in public health and health services research.**

Students will learn to integrate knowledge of the mechanics of policy analyses into short and long papers addressing specific topics in current and past health policy debates.

REQUIREMENTS

Course Requirements

All MS-Health Policy program students enroll for 31 core credits and 17 elective credits. The 48-credit requirement includes a Masters Thesis. Students may wish to give greater emphasis to either public health or health services policy as they develop their course of study with their advisor.

Program Requirements

Public health core courses:

PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6006	Mgt & Policy Approaches to PH

Program-specific courses:

PUBH 6242	ClinicalEpid&Decision Analysis
PUBH 6243	Topics:ClinicalEpi&DecAnalysis
PUBH 6305	Fundamentals for Health Policy
PUBH 6310	Statistical Analysis in Health Policy

PUBH 6315	Intro-Health Policy Analysis
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PUBH 6320	Advanced Health Pol Analysis
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PUBH 6330	Health Services and Law
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or PUBH 6335	Public Health and Law
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PUBH 6340	Health Economics and Finance
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PUBH 6345	Health Policy Research Design
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PUBH 6013	Master's Thesis
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Electives:

Any SPH graduate course(s)

Graduation Requirements

1. Graduate Credit Requirement: 48
2. Course Requirements: Successful completion of the core and elective courses, including completion of the Master's Thesis, are required.
3. Grade Point Requirement: A 3.0 (B average) overall grade point average is required.
4. Time Limit Requirement: The degree must be completed within five years.
5. Transfer Credit Policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the MS. Credits must have been earned from an accredited institution in the last 3 years with a grade point average of 3.0 or better.

GRADUATE CERTIFICATE IN HEALTH POLICY

For those seeking a solid foundation in the substance of health policy and the skills of health policy analysis but who do not wish to undertake the full Master of Public Health degree program, the department offers an 18-credit graduate certificate. Designed to provide both basic and advanced-level skills in policy research and analysis, the graduate certificate also includes elective course offerings to fit the student's desires. If enrolled in the graduate certificate in health policy program, the student will meet often with his/her advisor to craft a personalized course of study through the elective course offerings. Specifically, the graduate certificate in health policy requires:

PUBH 6002	Biostatistical Applic for PubH
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PUBH 6305	Fundamentals for Health Policy
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PUBH 6310	Statistical Analysis in Health Policy
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PUBH 6315	Intro-Health Policy Analysis
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PUBH 6320	Advanced Health Pol Analysis
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The graduate certificate in health policy is available standing alone, as a supplement to an Master of Public Health degree from a different department (epidemiology, global health, environmental and occupational health, etc.), or as a supplement to another degree (e.g., the J.D.). When pursued as a supplement to the master's degree from another department, 6 cross-over credits from the MPH degree are available to count towards the 18-credit graduate certificate. In other words, for students seeking both an MPH from another department and a graduate certificate in health policy at the same time, a total of 57 credits are required to complete both programs of study (those 12 graduate certificate credits must include the five required courses outlined above).

Graduation Requirements

- Graduate credit requirement: 18 graduate credits are required.
- The program director/advisor must pre-approve all course selections and course sequencing by developing a "program of study" prior to the student's initial registration. Graduate certificate students meet with their advisor each semester before registration. All changes in this program of study must be pre-approved by the program director/advisor.
- Successful completion of the required on-line CITI human subject research training modules.
- Successful completion of 8 Professional Enhancement hours.
- Grade point requirement: A 3.0 (B average) overall grade point average or better is required.
- Time limit requirement: The certificate must be completed within 2 years.
- Transfer credit policy: The program director/advisor may approve up to 4 graduate credits that have not been applied to a previous graduate degree to be transferred to the graduate certificate. The course(s) must be relevant to the graduate certificate. Credits must have been earned in the last 3 years with a grade point average of 3.0 or better.

DOCTOR OF PHILOSOPHY IN THE FIELD OF PUBLIC POLICY AND ADMINISTRATION (HEALTH POLICY TRACK)

REQUIREMENTS

Field Advisors A. Dor, P. Lantz

Students who choose this field will be prepared to analyze a broad array of health policy issues. These problems include, for example, assessing health and health needs, financing health services, health care reform, global health, care for underserved populations and long-term care. A multidisciplinary approach to these issues will combine the

curricula of economics, philosophy, sociology, law, public health and health management.

General examination core

PUBH 8404	AdvTpc-HlthSystms&HlthPolRsrch
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PUBH 8408	AdvTpc-HlthBehavRes&PractcAppl
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Field electives

Public Health/Health Policy

HSML 6202	Intro/Health Services Delivery
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HSML 6207	HealthServicesInfoApplications
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HSML 6236	Aging&Disability:Needs&Srvcs
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PUBH 6004	Env/Occ Hlth-Sustainable World
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PUBH 6006	Mgt & Policy Approaches to PH
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PUBH 6315	Intro-Health Policy Analysis
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PUBH 6320	Advanced Health Pol Analysis
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PUBH 6330	Health Services and Law
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PUBH 6335	Public Health and Law
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PUBH 6340	Health Economics and Finance
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PUBH 6364	Fed Budget Process/Health Care
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PUBH 6374	Pharmaceutical Policy
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PUBH 6442	Comparative Global Health Systems
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PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
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PUBH 8419	Measrmnt/PubHlth&HlthSrvcsRes
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Methods

ECON 8375	Econometrics I
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ECON 8376	Econometrics II
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ECON 8379	Laboratory in Applied Econometrics
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PPPA 6013	Econometrics-Policy Research I
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PUBH 6249	StatPackages/DataMgt&DataAnlys
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PUBH 6260	Adv DataAnalysis-Public Health
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Economics

ECON 8342	Labor Economics II
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ECON 8345	Industrial Organization I
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For more information visit the Trachtenberg School of Public Policy Doctor of Philosophy in the Field of Public Policy and Administration - Health Policy track program page (<http://tsppa.gwu.edu/phd-health-policy>).

DOCTOR OF PUBLIC HEALTH IN THE FIELD OF HEALTH POLICY

Program Directors A. Markus, P. Lantz

Mission

The DrPH Health Policy Specialty Field is focused on understanding and learning to apply to complex and real world problems the policy framework of public health and health care. Particular emphasis is placed on areas of focus affecting medically underserved and vulnerable populations. The specialty field allows candidates to work at the nexus of health policy, public health practice, and health services research.

Goals

The goal of the health policy specialty field is to create doctoral-level public health professionals who are uniquely equipped to provide real-world leadership at the national and state levels in all phases of public health, health care, and health policy development and implementation. The objectives of this specialty field are to:

- Provide advanced training on cutting edge issues in health policy;
- Equip candidates with the research and analytic methods they need to conduct the types of advanced analysis that can make a real difference in health care and public health.

Admissions Requirements

The Doctor of Public Health Program is designed for mid-career professionals seeking to become public health leaders. Applicants who have completed an MPH degree from a Council of Education for Public Health (CEPH) accredited program are strongly preferred for admission to the DrPH Program. Alternatively, applicants with a master's degree in another field may indicate their relevant training, research experience, or educational background comparable to the MPH. Doctoral applicants admitted without an MPH will be required to take additional course work at the graduate level that does not apply toward the minimum 48 credits required for the DrPH. Qualified applicants with degrees from institutions in foreign countries are also eligible for admission. All applicants must submit scores from the Graduate Record Exam (GRE) taken within five years of the date of application. Because admission to this program is highly selective, successful applicants have competitive academic credentials and substantial prior public health professional

work experience related to the specialty field to which they are applying.

Program Policies and Procedures

For program policies and procedures, please refer to the Doctor of Public Health Handbook and other resources located on the DrPH in the field of Health Policy website (<http://publichealth.gwu.edu/programs/health-policy-drph>).

COMPETENCIES

DrPH Core Competencies

The Doctor of Public Health (DrPH) Program prepares professionals to assume national and international leadership positions in environmental and occupational health, global health, health behavior, and health policy. The field of public health provides unique insights into the complex interrelationships between health, politics, and human development. It enables professionals to address public health issues by marshalling research and analytic skills to develop innovative approaches to understand health and to promote and advocate for improved health outcomes. Upon completion of the DrPH, students will demonstrate ability in these core competencies:

- Analyze a public health problem and determine appropriate sources of data and methods for problem identification, program planning, implementation, monitoring, and evaluation.

Relevant Courses

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6260	Adv DataAnalysis-Public Health
PUBH 8417	Qual Research Methods&Analysis
PUBH 8419	Measrmnt/PubHlth&HlthSrvcsRes

- Develop and analyze hypotheses that can be tested by appropriate quantitative or qualitative research designs and methodologies.

Relevant Courses

PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8422	AdvHlthCare&PubHlthRsrchDes

- Synthesize and evaluate research conducted by others.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8422	AdvHlthCare&PubcHlthRsrchDes

- Design strategies to accurately and effectively describe public health, economic, administrative, legal, social, political, and cultural implications of different health policy options.

Relevant Courses

PUBH 6247	Design of Health Studies
PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8417	Qual Research Methods&Analysis
PUBH 8419	Measrmnt/PublHlth&HlthSrvcsRes

- Design grant proposals to address public health problems.

Relevant Courses

PUBH 8416	Study Design & Evaluation Methods
PUBH 8422	AdvHlthCare&PubcHlthRsrchDes

- Present public health data and research syntheses to scientific and professional audiences and the public.

Relevant Courses

PUBH 8407	AdvTpc-HlthLdrshp/IntlSettings
PUBH 8422	AdvHlthCare&PubcHlthRsrchDes

- Defend the feasibility and expected outcomes of different policy options and transform them into organizations, plans, processes, and programs. Relevant courses:

Relevant Courses

PUBH 6247	Design of Health Studies
PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8417	Qual Research Methods&Analysis
PUBH 8422	AdvHlthCare&PubcHlthRsrchDes

- Appraise the dynamic forces that contribute to cultural diversity and develop responsive plans and programs.

Relevant Courses

PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8417	Qual Research Methods&Analysis

- Assess the determinants of health and illness, factors that contribute to health promotion and disease prevention, and factors that influence the use and cost of public health services in a population.

Relevant Courses

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Adv DataAnalysis-Public Health

- Develop and defend a budget statement that presents programmatic fiscal requirements to achieve stated objectives.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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- Describe the theory of organizational structure and its relation to professional practice.

Relevant Courses

PUBH 6001	BiologicalConcepts/PublicHlth
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- Support a culture of ethical standards of conduct in the research process and within organizations and communities.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8416	Study Design & Evaluation Methods
PUBH 8422	AdvHlthCare&PubcHlthRsrchDes

- Lead a team of diverse professionals reflecting shared values and vision to achieve specific objectives.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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Program-Specific Competencies

Because the DrPH builds on knowledge and competencies already acquired in a master program, upon completion of the DrPH in Health Policy, students will be able to demonstrate strengthened functional competence on master-level competencies in health policy and additional doctoral-level competence required of the DrPH in Health Policy, which is designed to teach not only the substance of health policy (how public health and health services policy is developed and implemented in the U.S.) and the skills of policy analysis

(including research, qualitative and quantitative, and written and oral communications skills), but also the substance and skills needed to apply theoretical frameworks and qualitative and quantitative research methods to real world problems in order to draw recommendations for policy change.

Upon completion of the DrPH in Health Policy, students will demonstrate functional competence to:

- Critically describe and comprehensively assess the political, legal, philosophical, economic, financial, and/or social framework of U.S. health policy and demonstrate high level proficiency in applying that understanding to the analysis of current health policy issues.

Relevant Courses

PUBH 6330	Health Services and Law
or PUBH 6335	Public Health and Law
PUBH 8401	Found PH Leadership & Practice
PUBH 8402	Ldrshp/PublicHlthPractc&Policy
PUBH 8404	AdvTpc-HlthSystms&HlthPolRsrch (prereqs: PUBH 6315 or equivalent)
PUBH 8405	Adv Health Economics Research (prereqs: basic microeconomics & PUBH 6340 or equivalent)

- Rapidly locate, critically assess, appropriately use, and subtly synthesize policy-relevant qualitative and quantitative information relevant to key issues in U.S. health policy, including a full range of evidence related to the legislative, regulatory, and judicial processes, peer-reviewed literature, and “gray” literature produced by governments, policy analysis and research entities and other relevant organizations.

Relevant Courses

PUBH 6330	Health Services and Law
or PUBH 6335	Public Health and Law
PUBH 8404	AdvTpc-HlthSystms&HlthPolRsrch (prereqs: PUBH 6315 or equivalent)
PUBH 8413	Research Leadership
PUBH 8414	Policy/Management Leadership
PUBH 8417	Qual Research Methods&Analysis
PUBH 8420	Advanced Analysis & Dissemination
PUBH 8422	AdvHlthCare&PubcHlthRsrchDes
PUBH 8423	Dissertation Research

- Expertly apply the core elements of a policy analysis to key issues in U.S. health policy (health services and public health policy) through both short and long written papers, and in oral presentations of policy analyses.

Relevant Courses

PUBH 8404	AdvTpc-HlthSystms&HlthPolRsrch (prereqs: PUBH 6315 or equivalent)
PUBH 8413	Research Leadership
PUBH 8414	Policy/Management Leadership
PUBH 8415	Instructional Leadership
PUBH 8422	AdvHlthCare&PubcHlthRsrchDes
PUBH 8423	Dissertation Research

- Critically identify, appropriately assess and, expertly apply theoretical knowledge and conceptual models in support of health policy research, develop hypotheses that can be tested in a health policy research project, select appropriate health policy research designs and methodologies, including quantitative, qualitative, and mixed methods, and understand and appropriately apply analytical strategies used in health policy research and analysis.

Relevant Courses

PUBH 8404	AdvTpc-HlthSystms&HlthPolRsrch (prereqs: PUBH 6315 or equivalent)
PUBH 8405	Adv Health Economics Research (prereqs: basic microeconomics & PUBH 6340 or equivalent)
PUBH 8406	AdvTpc-HlthRsrch/GlobalArena
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8418	Applied Statistical Analysis
PUBH 8420	Advanced Analysis & Dissemination
PUBH 8422	AdvHlthCare&PubcHlthRsrchDes
PUBH 8423	Dissertation Research

- Acquire the ability and the expertise to write grant and contract proposals, prepare applications, and identify and address the ethical implications of research methods.

Relevant Courses

PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qual Research Methods&Analysis
PUBH 8418	Applied Statistical Analysis

PUBH 8420	Advanced Analysis & Dissemination
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PUBH 8422	AdvHlthCare&PublHlthRsrchDes
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PUBH 8423	Dissertation Research
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- Acquire the ability and the skills to become a leader in the field of health policy (public health and health services policy).

Relevant Courses

PUBH 6330	Health Services and Law
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or PUBH 6335	Public Health and Law
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PUBH 8401	Found PH Leadership & Practice
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PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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PUBH 8404	AdvTpc-HlthSystms&HlthPolRsrch (prereqs: PUBH 6315 or equivalent)
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PUBH 8405	Adv Health Economics Research (prereqs: basic microeconomics & PUBH 6340 or equivalent)
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PUBH 8406	AdvTpc-HlthRsrch/GlobalArena
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PUBH 8413	Research Leadership
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PUBH 8414	Policy/Management Leadership
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PUBH 8415	Instructional Leadership
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PUBH 8416	Study Design & Evaluation Methods
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PUBH 8417	Qual Research Methods&Analysis
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PUBH 8418	Applied Statistical Analysis
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PUBH 8420	Advanced Analysis & Dissemination
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PUBH 8422	AdvHlthCare&PublHlthRsrchDes
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PUBH 8423	Dissertation Research
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- Develop and/or teach part of a course (e.g., syllabus, guest lecture) in health policy (public health and health services policy) or related area.

Relevant Course

PUBH 8415	Instructional Leadership
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REQUIREMENTS

20 credits of required foundational and research methods courses

PUBH 8401	Found PH Leadership & Practice
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PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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PUBH 8416	Study Design & Evaluation Methods
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PUBH 8417	Qual Research Methods&Analysis
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PUBH 8418	Applied Statistical Analysis
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PUBH 8419	Measrmnt/PublHlth&HlthSrvcRes
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PUBH 8420	Advanced Analysis & Dissemination
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20 credits of required specialty field courses

PUBH 8404	AdvTpc-HlthSystms&HlthPolRsrch
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PUBH 8405	Adv Health Economics Research
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7 to 10 credits of specialty field courses

PUBH 6330	Health Services and Law
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PUBH 6325	Fed Policymaking &Pol Advocacy
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PUBH 6335	Public Health and Law
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PUBH 6360	AdvMaternal&ChildHealthPolicy
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PUBH 6362	Civil Rights Issue/Health Care
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PUBH 6376	Primary Health Care Policy
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4 credits of professional leadership courses (minimum of 2 must be Instructional Leadership)

PUBH 8413	Research Leadership
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PUBH 8415	Instructional Leadership
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8 to 11 credits of dissertation preparation and dissertation

PUBH 8422	AdvHlthCare&PublHlthRsrchDes
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PUBH 8423	Dissertation Research
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HEALTH SERVICES MANAGEMENT AND LEADERSHIP

The Department of Health Services Management and Leadership prepares students to become leaders in the field of healthcare delivery. For more than 50 years, our programs have set a standard of excellence, combining classroom learning with theoretical and applied research and hands-on administrative residency training. Whether you seek a career at a hospital or long-term care facility, a physician group practice or an ambulatory care center, our programs will prepare you to shape the future of healthcare organizations.

GRADUATE

Master's programs

- Master of Health Administration (p. 267)
- Master of Health Administration – online/executive program (p. 270)
- Master of Public Health in the field of public health management (p. 271)
- Health Services Administration Specialist (p. 273)

CERTIFICATE

- Graduate certificate in health administration generalist (p. 274)
- Graduate certificate in long-term care (p. 275)

FACULTY

Professors R.E. Burke (*Chair*), K.J. Darr, C.C. Ferguson, L.Friedman

Assistant Professors A. Hamilton, B. Frogner, L. Masselink

Adjunct Instructors D.G. Anderson, J.A. Volarich

MASTER OF HEALTH ADMINISTRATION

Program Director L. Friedman

Mission

The Master of Health Administration Program will develop leaders who possess the values, knowledge, and skills to achieve optimal delivery of healthcare.

Overview

Since its founding in 1959, the Department of Health Services Management and Leadership has offered education in health services administration to help meet the growing need for skilled executives to manage health-related organizations and programs. Because it recognizes and responds to the fast-paced, dynamic changes occurring in the industry today, the Program is well-positioned to prepare not only health care managers, but the health care leaders of tomorrow. An MHA degree from the Department of Health Services Management incorporates business and medical informatics training, knowledge of health care systems, management theory, ethics, law, and policy, critical values in decision making, and much more.

The Program's special strengths include an emphasis on experiential learning and community service, distinguished faculty, research collaborations and relationships with policymaking and health care organizations in Washington, DC. Active alumni (<http://www.gwumc.edu/sphhs/alumni/hsmlaa>) and student (<http://www.gwumc.edu/sphhs/departments/hsml/>)

hsmlsa) associations foster mentoring, networking and other professional development opportunities.

The curriculum focuses on leadership and strategic management trends, quality and performance improvement, leadership skills, community health planning and advocacy, organizational theory, finance and health law. The Program also offers residency and internship opportunities that allow students to apply their classroom knowledge in healthcare settings. Numerous seminar, conference, and networking opportunities are made possible through relationships with professional organizations and associations.

Goals

Graduates of the program will be able to:

- Effectively manage organizational change and promote organizational and clinical excellence
- Manage health services organizations under alternative financing mechanisms
- Lead and manage human resources in diverse organizational environments.
- Manage information resources to assist in effective decision making and clinical management
- Use statistical, quantitative, and economic analyses in decision making
- Have the skills to improve both business and clinical outcomes of health services organizations

COMPETENCIES

Broadly defined, the goal of health services management and leadership is to provide health care delivery organizations with talented graduates who possess the knowledge, skills, and attitudes to deliver health services in the most effective and efficient manner possible. The Master of Health Administration degree is designed to provide students with the ability to develop and demonstrate leadership, communication and relationship management, business skills and knowledge, professionalism and healthcare knowledge applied across the widest possible spectrum of health care delivery organizations. Upon completion of the Master of Health Administration graduates will be competent to:

1. Lead and manage others, plan and implement change and engage in honest self-assessment.

Relevant courses:

HSML 6203	Intro to Health Management
HSML 6213	HealthServicesMrktng&Planning
HSML 6216	HumanResourcesMgt&OrgBehavior
HSML 6218	Sem-HlthServicesMgt&Leadership
HSML 6221	TransLdrshp/HealthServDelivery

HSML 6231	Management-Acute Care Hospital
HSML 6233	Delivery-Behav Health Services
HSML 6234	Physician Practice Management
HSML 6237	Managing/SkilledNursngFacility
HSML 6238	Ambulatory Care Management

2. Enhance and improve communication and relationship management within interpersonal communication, verbal and written communication, and team-based processes.

Relevant courses:

HSML 6202	Intro/Health Services Delivery
HSML 6203	Intro to Health Management
HSML 6204	Quality&PerformancelImprovement
HSML 6212	CommunityHealth Mgt & Advocacy
HSML 6213	HealthServicesMrktng&Planning
HSML 6216	HumanResourcesMgt&OrgBehavior
HSML 6218	Sem-HlthServicesMgt&Leadership
HSML 6221	TransLdrshp/HealthServDelivery
HSML 6231	Management-Acute Care Hospital
HSML 6237	Managing/SkilledNursngFacility

3. Demonstrate the breadth of core business skills and knowledge in the following areas:

- Solving business problems and decision making and project management.

Relevant courses:

HSML 6203	Intro to Health Management
HSML 6204	Quality&PerformancelImprovement
HSML 6213	HealthServicesMrktng&Planning
HSML 6218	Sem-HlthServicesMgt&Leadership
HSML 6231	Management-Acute Care Hospital
HSML 6246	Service Line & Project Mgt

- Quantitative skills, financial management, economic analysis and information and technology management.

Relevant courses:

HSML 6206	QuanMethds&Epid/HealthServices
HSML 6207	HealthServicesInfoApplications

HSML 6208	Medical Informatics
HSML 6209	Health Services Finance
HSML 6210	Hlth Serv Financel Applications
HSML 6211	Health Economics

- Legal principles, marketing, quality improvement, organizational dynamics, and governance.

Relevant courses:

HSML 6203	Intro to Health Management
HSML 6204	Quality&PerformancelImprovement
HSML 6213	HealthServicesMrktng&Planning
HSML 6215	Health Law for Managers
HSML 6231	Management-Acute Care Hospital
HSML 6234	Physician Practice Management
HSML 6237	Managing/SkilledNursngFacility
HSML 6238	Ambulatory Care Management
HSML 6241	Cmpl&RiskMgt/HlthSrvcsDelivery

4. Apply the core elements of ethics and professionalism to improve management practice within health care delivery organizations.

Relevant courses:

HSML 6202	Intro/Health Services Delivery
HSML 6203	Intro to Health Management
HSML 6212	CommunityHealth Mgt & Advocacy
HSML 6218	Sem-HlthServicesMgt&Leadership
HSML 6254	Sem:Ethics-Health Services Mgt

5. Apply appropriate knowledge of healthcare issues and trends, healthcare personnel, standards and regulations and population health, and assessment to optimize the delivery of services.

Relevant courses

HSML 6202	Intro/Health Services Delivery
HSML 6203	Intro to Health Management
HSML 6204	Quality&PerformancelImprovement
HSML 6211	Health Economics
HSML 6212	CommunityHealth Mgt & Advocacy

HSML 6215	Health Law for Managers
HSML 6231	Management-Acute Care Hospital
HSML 6236	Aging&Disability:Needs&Srvcs
HSML 6241	Cmpl&RiskMgt/HlthSrvcsDelivery
PUBH 6004	Env/Occ Hlth-Sustainable World

REQUIREMENTS

Course Requirements

All MHA students enroll in 50 credits: Core Courses (31 credits), Electives (10-16 credits), and Field Experience (3-9 credits). There are two MHA focus areas that require the field experience of a Residency (9 credits): 1. Acute and Ambulatory Care Management; 2. Post-acute Care Management (includes Long Term care). There are three focus areas that require the field experience of an Internship (3 credits): 1. Information Systems and Financial Management; 2. Operations Management; 3. Strategic Management and Policy.

Prerequisites for admission into the MHA Program include an undergraduate course in introductory accounting and an introductory course in statistics earning a grade of a B or better.

Program Requirements

Core courses:

HSML 6202	Intro/Health Services Delivery
HSML 6203	Intro to Health Management
HSML 6204	Quality&PerformanceImprovement
HSML 6206	QuanMethds&Epid/HealthServices
HSML 6207	HealthServicesInfoApplications
HSML 6208	Medical Informatics
HSML 6209	Health Services Finance
HSML 6210	Hlth Serv Financ Applications
HSML 6211	Health Economics
HSML 6212	CommunityHealth Mgt & Advocacy
HSML 6213	HealthServicesMrktng&Planning
HSML 6215	Health Law for Managers
HSML 6216	HumanResourcesMgt&OrgBehavior
HSML 6218	Sem-HlthServicesMgt&Leadership
PUBH 6004	Env/Occ Hlth-Sustainable World

Program-specific electives:

Residency students select 10 credits; Internship students select 16 credits from the following:

HSML 6221	TransLdrshp/HealthServDelivery
HSML 6222	GroupLdrshp&TeamFacilitation
HSML 6231	Management-Acute Care Hospital
HSML 6232	Institution & Systems Mgt Apps
HSML 6233	Delivery-Behav Health Services
HSML 6234	Physician Practice Management
HSML 6236	Aging&Disability:Needs&Srvcs
HSML 6237	Managing/SkilledNursngFacility
HSML 6238	Ambulatory Care Management
HSML 6239	Managed Care
HSML 6244	SupplyChainMgt/HealthServices
HSML 6246	Service Line & Project Mgt
HSML 6247	Consulting in Health Care
HSML 6254	Sem:Ethics-Health Services Mgt
HSML 6263	Health Services Financial Mgt
HSML 6270	Research-Health Services Admin (Independent Study)
HSML 6285 & HSML 6286	Readings-Health Services Mgt and Readings-Health Services Mgt
HSML 6299	Topics in HSML

Field experience:

Select one of the following areas:

Residency 1 Focus Areas:

HSML 6273	Residency
HSML 6274	Residency
HSML 6275	Residency

Acute and Ambulatory Care Management

Post-acute Care Management (including Long Term Care)

Internship Focus Areas:

HSML 6271	Field Problem Studies
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Information Systems and Financial Management

Graduation Requirements

1. Graduate Credit Requirement: 50 graduate credits are required.
2. Grade Point Requirement: A 3.0 (B average) overall grade point average is required.
3. Time Limit Requirement: The degree must be completed within five years.
4. Transfer Credit Policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the MHA, upon approval. Up to 18 credits may be transferred to the MHA from the Health Administration Generalist Certificate. Credits must have been earned from a CAHME accredited institution in the last 3 years with a grade point average of 3.0 or better.
5. Residency or Internship Requirement: Successful completion of a nine credit residency or three-credit internship.
6. Prerequisites: Undergraduate course in accounting and statistics with a grade of B or better.

MASTER OF HEALTH ADMINISTRATION - ONLINE/EXECUTIVE PROGRAM

Program Director L. Friedman

Mission

The Executive Master of Health Administration (MHA@GW) degree program will develop leaders who possess the values, knowledge, and skills to achieve optimal delivery of healthcare.

Overview

Since its founding in 1959, the Department of Health Services Management and Leadership offers training in health services administration to help meet the growing need for skilled executives to manage health-related organizations and programs. Because it recognizes and responds to the fast-paced, dynamic changes occurring in the industry today, the Department is well-positioned to prepare not only health care managers, but the health care leaders of tomorrow. An MHA@GW degree from the Department of Health Services Management incorporates business and medical informatics training, knowledge of health care systems, law and policy, critical values in decision making, and much more.

The Department's special strengths include an emphasis on experiential learning and community service, distinguished faculty, research collaborations and relationships with policy making and health care organizations in Washington, DC. Active alumni (<http://www.gwumc.edu/sphhs/alumni/hsmlla>) and student (<http://www.gwumc.edu/sphhs/departments/hsmll/>)

hsmlla) associations foster mentoring, networking and other professional development opportunities.

Building on our 54 years of experience preparing health care leaders and our recent success in e-learning, the MHA@GW degree is designed for adult learners who possess either clinical or administrative experience in healthcare delivery. The MHA@GW is designed to be completed in two years but can be completed in five years. Classes are taught in a hybrid model combining online classes (ten weeks in length) and executive format intensive classes.

The MHA@GW curriculum focuses on two main themes. The first is developing the leadership and ethical skills needed for persons who seek to create highly effective healthcare organizations. Leadership and ethics will be taught throughout the curriculum. Eight online, integrated learning modules include: management and strategy; informatics and decision-science; finance; community and public health; economics and quantitative methods; quality improvement; law and policy; and a capstone seminar. The culminating activities for the MHA@GW are a field-based research project and completion of a leadership portfolio.

Goals

Graduates of the program will be expected to:

- Effectively manage organizational change and promote organizational and clinical excellence
- Manage health services organizations under alternative financing mechanisms
- Lead and manage human resources in diverse organizational environments.
- Manage information resources to assist in effective decision making and clinical management
- Use statistical, quantitative, and economic analyses in decision making
- Have the skills to improve both business and clinical outcomes of health services organizations
- Develop the skills to consistently use ethical decision making practices

COMPETENCIES

The goal of health services management and leadership is to provide health care delivery organizations with talented graduates who possess the knowledge, skills and attitude to deliver health services in the most effective and efficient manner possible. The Executive Master of Health Administration (MHA@GW) degree is designed to provide students with the ability to develop and demonstrate leadership, communication and relationship management, business skills and knowledge, professionalism and healthcare knowledge applied across the widest possible spectrum of healthcare delivery organizations. Upon completion of the

MHA@GW in Health Services Management and Leadership, students will demonstrate competence to:

1. Demonstrate leadership by leading and managing others, planning and implementing change and engaging in honest self-assessment. Related courses: Modules 1 and 8 and immersions 1, 2 and 4
2. Enhance and improve communication and relationship management within interpersonal communication, verbal and written communication, and team based processes. Related courses: All modules, immersions, organizational research project and final portfolio
3. Demonstrate the breadth of core business skills and knowledge in the following areas:
4. Solving business problems and decision making, and project management. Related courses: Modules 1, 6 and 8 and immersion 2
5. Quantitative skills, financial management, economic analysis and information and technology management. Related courses: Modules 2, 3 and 5.
6. Legal principles, marketing, quality improvement, organizational dynamics and governance. Related courses: Modules 1, 6, 7, 8 and immersion 3
7. Apply the core elements of ethics and professionalism to improve management practice within health care delivery organizations. Related courses: All modules and immersions
8. Apply appropriate knowledge of healthcare policy issues and trends, healthcare personnel, standards and regulations and population health and assessment to optimize the delivery of services. Related courses: Module 4 and immersion 3.

REQUIREMENTS

Course requirements

All Department of Health Services Management and Leadership MHA@GW students enroll in 50 total credits. MHA@GW students must complete all eight online modules along with four on-campus immersion classes. In addition, students complete an applied organizational research project and leadership portfolio.

Prerequisites for admission into the MHA@GW include an undergraduate course in introductory financial accounting and an introductory course in statistics. All MHA@GW students must have a minimum of three years of professional experience in the healthcare sector and be currently employed by a healthcare related organization.

Please refer to the MHA@GW website (<http://mha.gwu.edu>) for further information.

MASTER OF PUBLIC HEALTH IN THE FIELD OF PUBLIC HEALTH MANAGEMENT

Program Director K. Darr

Practicum Director R. Burke

Mission

The mission of the Master of Public Health (MPH) degree with a concentration in Public Health Management (PHM) is to provide training for those who want to manage a variety of public health programs. Eligibility for the MPH-PHM is limited to clinicians, such as physicians, registered nurses and dietitians, and to non-clinician, mid-career public health professionals who have approximately ten years of applicable experience. The objective of the MPH in Public Health Management is to train clinicians and mid-career health care professionals to become managers in state and local public health agencies. A major feature of the MPH in Public Health Management program is that it provides clinicians with the management skills that will augment their clinical skills and public health knowledge.

Goals

Graduates of this program will be expected to have:

- Managerial skills appropriate to a variety of public health programs and services (e.g., organization planning, organizing,
- leading/motivating, controlling, budget/resource allocation, quality improvement, decision making/problem solving, and
- ethical analysis);
- An understanding of program/service planning, designing, marketing, and evaluating for purposes of developing business plans
- and grant proposals;
- Basic skills in financial analysis related to management decision-making; and
- Practical management experience gained through a special project conducted under a preceptor and mentor.

COMPETENCIES

Program-Specific Competencies

Upon completion of the MPH Public Health Management Program students should possess the following functional competencies:

- Managerial expertise including the skills necessary to manage in a variety of public health programs and services (e.g., planning, organizing, leading/motivating, controlling, budget/resource allocation, quality improvement, decision making/problem solving, ethical analysis).

Relevant courses:

HSML 6203	Intro to Health Management
HSML 6209	Health Services Finance
HSML 6212	CommunityHealth Mgt & Advocacy
HSML 6218	Sem-HlthServicesMgt&Leadership
PUBH 6006	Mgt & Policy Approaches to PH

- Preventive and community perspective on health care including the ability to view health care systems as a comprehensive, dynamic, community-wide, and prevention-oriented system.

Relevant courses:

HSML 6212	CommunityHealth Mgt & Advocacy
HSML 6213	HealthServicesMrktng&Planning
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6007	Social&BehaviorAppr-Pub.Hlth

- Scientific approach to disease control including the epidemiological concepts and biostatistical/computer skills necessary for successfully analyzing and applying the results of epidemiological studies, for effectively undertaking complex administrative decisions, especially in areas of health planning.

Relevant courses:

HSML 6212	CommunityHealth Mgt & Advocacy
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6502	Practical Data Analysis: PCH

- Program/service planning, design, marketing, and evaluation skills to successfully develop business plans and grant proposals.

Relevant courses:

HSML 6213	HealthServicesMrktng&Planning
HSML 6238	Ambulatory Care Management
HSML 6246	Service Line & Project Mgt
PUBH 6006	Mgt & Policy Approaches to PH

- Organizational development/goal implementation to maximize organizational success in reaching internally and socially approved objectives through socially responsive planning and by avoiding the legal, political, and ethical

hazards in the administrative environment, and by enhancing organizational effectiveness.

Relevant courses:

HSML 6203	Intro to Health Management
HSML 6212	CommunityHealth Mgt & Advocacy
HSML 6216	HumanResourcesMgt&OrgBehavior
HSML 6218	Sem-HlthServicesMgt&Leadership
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6335	Public Health and Law

- Financial analysis including the concepts and skills necessary to describe, monitor, and manipulate the economic and financial components of the manager's responsibilities (e.g., understanding funding sources and grants as they affect public health management).

Relevant courses:

HSML 6209	Health Services Finance
PUBH 6006	Mgt & Policy Approaches to PH

- Practical application of knowledge and skills through a practicum conducted under a preceptor or mentor.

Relevant course:

PUBH 6014	Practicum
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- Individual interests are explored through special topics courses.

Relevant course:

HSML 6270	Research-Health Services Admin
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REQUIREMENTS

Course Requirements

MPH students who select the Public Health Management Program enroll in Core Courses (15 credits) and Program-Specific Courses and topics/electives (26 credits). The program requires 45-semester credits including a Practicum and a Culminating Experience (4 credits), both of which allow students to apply their didactic education to field-based experience.

Program Requirements

Required core courses:

PUBH 6001	BiologicalConcepts/PublicHlth
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PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
Required program-specific courses:	
HSML 6203	Intro to Health Management
HSML 6207	HealthServicesInfoApplications
HSML 6209	Health Services Finance (a prerequisite of 2-3 semester hours of Basic Accounting is required)
HSML 6212	CommunityHealth Mgt & Advocacy
HSML 6213	HealthServicesMrktng&Planning
HSML 6216	HumanResourcesMgt&OrgBehavior
HSML 6218	Sem-HlthServicesMgt&Leadership
HSML 6238	Ambulatory Care Management
HSML 6246	Service Line & Project Mgt
PUBH 6335	Public Health and Law
PUBH 6502	Practical Data Analysis: PCH
Electives:	
Any SPH graduate course(s)	
Practicum and culminating experience courses:	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must

have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

HEALTH SERVICES ADMINISTRATION SPECIALIST

Program Director K. Darr

Mission

The Health Services Administration Specialist degree will develop leaders who possess the values, knowledge, and skills to achieve optimal delivery of healthcare. The degree is designed for individuals who have earned a post-baccalaureate degree and wish to either change careers by gaining knowledge and skills in health services administration or to upgrade their formal knowledge and skills in healthcare administration to include the latest advancements in the field.

Applicants must hold a post-baccalaureate degree from an accredited college or university.

REQUIREMENTS

Course Requirements

All Health Services Administration Specialist degree candidates complete 30 graduate credits of approved coursework.

1. Thirty graduate credits are required. The Specialist has one required course: HSML 6270 Research-Health Services Admin (Independent Study). All other courses are chosen in consultation with the program director.
2. The program director must pre-approve all course selections and sequencing by developing a "program of study" with the student prior to initial registration. Specialist candidates must meet with the program director each semester before registration; all changes to the program of study must be approved.
3. The program director may approve up to eight graduate credits that have not been applied to a previous graduate degree as transfer credit into the Specialist degree program. Course(s) must be relevant to the Specialist degree; credit must have been earned from an accredited institution within the past three years with a grade of B, or better.
4. Grade Point Requirement: A 3.0 (B average) overall grade point average, or better, is required.
5. Time Limit Requirement: The degree must be completed within four years.

Program Requirements

Required course:

HSML 6270	Research-Health Services Admin
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HSML courses that may be taken for the specialist:

PUBH 6004	Env/Occ Hlth-Sustainable World
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GRADUATE CERTIFICATE IN HEALTH ADMINISTRATION GENERALIST

REQUIREMENTS

Program Director Kurt Dar

Program Advisor Leonard Friedman

Program Requirements

18 credits from courses below: (with advisor's approval)

PUBH 6004 Env/Occ Hlth-Sustainable World

HSML 6202 Intro/Health Services Delivery

HSML 6203 Intro to Health Management

HSML 6204 Quality&PerformanceImprovement

HSML 6206 QuanMethds&Epid/HealthServices

HSML 6207 HealthServicesInfoApplications

HSML 6208 Medical Informatics

HSML 6209 Health Services Finance

HSML 6210 Hlth Serv FinancI Applications

HSML 6211 Health Economics

HSML 6212 CommunityHealth Mgt & Advocacy

HSML 6213 HealthServicesMrktng&Planning

HSML 6215 Health Law for Managers

HSML 6216 HumanResourcesMgt&OrgBehavior

HSML 6218 Sem-HlthServicesMgt&Leadership

Electives (with advisor's approval)

Graduation Requirements

1. Graduate Credit Requirement: 18 graduate credits are required.
2. Course Requirements: At least 9 credits must be taken from the program-specific courses.
3. Program of Study: The exact courses and course substitutions from other programs in the University require the approval of the academic advisor.
4. Grade Point Requirement: A 3.0 (B average) overall grade point average is required.
5. Time Limit Requirement: The Certificate must be completed within two years.

HSML 6202	Intro/Health Services Delivery
HSML 6203	Intro to Health Management
HSML 6204	Quality&PerformanceImprovement
HSML 6206	QuanMethds&Epid/HealthServices
HSML 6207	HealthServicesInfoApplications
HSML 6208	Medical Informatics
HSML 6209	Health Services Finance
HSML 6210	Hlth Serv FinancI Applications
HSML 6211	Health Economics
HSML 6212	CommunityHealth Mgt & Advocacy
HSML 6213	HealthServicesMrktng&Planning
HSML 6215	Health Law for Managers
HSML 6216	HumanResourcesMgt&OrgBehavior
HSML 6218	Sem-HlthServicesMgt&Leadership
HSML 6221	TransLdrshp/HealthServDelivery
HSML 6222	GroupLdrshp&TeamFacilitation
HSML 6231	Management-Acute Care Hospital
HSML 6232	Institution & Systems Mgt Apps
HSML 6233	Delivery-Behav Health Services
HSML 6234	Physician Practice Management
HSML 6236	Aging&Disability:Needs&Srvc
HSML 6237	Managing/SkilledNursngFacility
HSML 6238	Ambulatory Care Management
HSML 6239	Managed Care
HSML 6241	Cmpl&RiskMgt/HlthSrvcDelivery
HSML 6244	SupplyChainMgt/HealthServices
HSML 6246	Service Line & Project Mgt
HSML 6247	Consulting in Health Care
HSML 6254	Sem:Ethics-Health Services Mgt
HSML 6285	Readings-Health Services Mgt
HSML 6286	Readings-Health Services Mgt
HSML 6299	Topics in HSML

6. Transfer Credit Policy: Up to 6 graduate credits that have not been applied to a previous graduate degree may be transferred to the Certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point average of 3.0 or better.
7. Transferring to the MHA Program: Upon successful completion of the Graduate Certificate Program students may apply for the MHA program. Up to 18 credits may transfer to the MHA.

GRADUATE CERTIFICATE IN LONG-TERM CARE

Program Director R. Burke

The National Association of Boards of Licensure for Long Term Care has accredited the HSML Department's program in long term care management. More and more states require that for those seeking nursing home administrator licenses, only courses in programs with this accreditation are considered to meet the educational requirements of the state licensure standards. We are excited to be one such program. Our certificate is 18 credits all of which can be applied to the MHA degree.

REQUIREMENTS

Course Requirements

1. Graduate credit requirement. 18 graduate credits are required.
2. The program director/advisor must pre-approve all course selections and course sequencing by developing a "program of study" prior to the student's initial registration. Graduate certificate students meet with their advisor each semester before registration. All changes in this program of study must be pre-approved by the program director/advisor.
3. Course requirements. Since most graduate certificate students are currently enrolled in an MPH program or have previously earned a graduate degree, most course credits will be selected from the program-specific course list. Under no circumstances may a certificate student enroll in fewer than 9 credits of program-specific courses.
4. Grade point requirement. A 3.0 (B average) overall grade point average or better is required.
5. Time limit requirement. The certificate must be completed within 2 years.
6. Transfer credit policy. The program director/advisor may approve up to 4 graduate credits that have not been applied to a previous graduate degree to be transferred to the graduate certificate. The course(s) must be relevant to the graduate certificate. Credits must have been earned in the last 3 years from an accredited institution with a grade point of 3.0 or better.

Program Requirements

Required courses credits semester offered

HSML 6203	Intro to Health Management
HSML 6207	HealthServicesInfoApplications
HSML 6216	HumanResourcesMgt&OrgBehavior
HSML 6236	Aging&Disability:Needs&Srvcs
HSML 6237	Managing/SkilledNursngFacility

Electives (6 credits)

The following is a sample list. Topics vary from semester to semester.

HSML 6299	Topics in HSML
HSML 6299	Topics in HSML
HSML 6299	Topics in HSML
HSML 6204	Quality&PerformancelImprovement
PUBH 6537	Health Promotion & Aging
PUBH 6099	Topics in Public Health
PUBH 6099	Topics in Public Health

PREVENTION AND COMMUNITY HEALTH

The Department of Prevention and Community Health is concerned with social and behavior change for the health and well-being of people around the world. We care about prevention, and we promote health and well-being with the active participation of individuals and communities. If you are interested in putting into practice the latest public health research, or making significant scholarly contributions to the evidence base of public health, this is the program for you. Our students study four interrelated fields - community-oriented primary care; health promotion; maternal and child health; and public health communication and marketing.

GRADUATE

Master's programs

- Master of Public Health in the field of community oriented primary care (p. 276)
- Master of Public Health in the field of public health communication and marketing (p. 285)
- Master of Public Health in the field of health promotion (p. 280)

- Master of Public Health in the field of maternal and child health (p. 282)

Doctoral program

- Doctor of Public Health in the field of health behavior (p. 288)

FACULTY

Professors J.F. Cawley, W.H. Dietz, Jr. (*Visiting*), W.D. Evans, K.A. Horn, R.N. Rimal (*Chair*)

Associate Professors L.C. Abrams, M.C. Edberg, K.A. McDonnell, M.A. Napolitano, O.A. Price, K.M. Roche, C.H. Sparks, F.Spielberg, M. Turner, A.N. Vyas

Assistant Professors E.L. Andrade (*Research*), J. Bingenheimer, C. Harrington, E.B. Parrish, M. Ruiz (*Research*)

Adjunct Professor T. Henry

Adjunct Instructor A.Franz

MASTER OF PUBLIC HEALTH IN THE FIELD OF COMMUNITY ORIENTED PRIMARY CARE

Program Director F Spielberg

Practicum Director K. Pomerantz

Mission Statement

The Community Oriented Primary Care program at the Milken Institute School of Public Health offers Master of Public Health (MPH) and Graduate Certificate programs designed to train health professionals and public health practitioners to implement and evaluate evidence-based interventions to improve community health, clinical care outcomes, and patient experience, while lowering health care costs and decreasing health disparities.

COPC

The Community Oriented Primary Care (COPC) program trains future health care innovators in the methods of COPC which provide skills to conceptualize, implement, evaluate and disseminate interventions that bridge public health and clinical medicine. COPC begins by teaching practitioners methods to fully understand the needs of communities, health care providers, and policy makers. Concurrently skills are developed to read and interpret literature to inform future intervention design. With this in-depth understanding, COPC practitioners learn to work with stakeholders to prioritize interventions that will have a high likelihood of improving health outcomes and patient experience while lowering health care costs and decreasing health disparities. COPC practitioners learn to conduct in depth assessments which help to shape intervention design and serve as baseline data to evaluate intervention impact. Intervention skills are

acquired that include implementation of social marketing campaigns, advocacy campaigns, mobile health interventions, individual brief behavioral interventions, peer interventions, quality improvement projects using data from electronic health records, structural interventions to impact health behaviors, and health system innovations to improve the ability of community based organizations to educate, test, and link to care patients with preventable and chronic health conditions. Evaluation skills are acquired that include analysis of qualitative, quantitative and cost data. Dissemination skills are acquired to take best practices to scale. Through experiential learning COPC practitioners will develop the skills necessary to lead health improvement projects in community, health department, academic and clinical settings.

Goals

The following are goals of this educational program:

- Provide the knowledge and skills necessary to implement a COPC program
- Provide an analytical framework for evaluating community-based interventions using the principles and methods of COPC as a reference.
- Provide opportunities for COPC practice, especially within vulnerable communities
- Create health and public health practitioners with skills necessary to excel in the following positions:
 - Clinic Quality Improvement Specialist (clinic setting)
 - Patient Centered Medical Home team leader (clinic setting)
 - Supervisor of patient care coordination (clinic or MCO setting)
 - Community health specialist (community, clinic or public health setting)
 - Health promotion specialist (community or clinic setting)
 - Supervisor of Community Health Worker program (community or clinic setting)
 - Community Health Research coordinator (academic, clinic or community setting)
 - Director of community clinic or community health organization (With dual health and MPH degree)

Background

COPC provides the bridge between clinical medicine and public health, in which the community is the focal point in the delivery of health care. It provides a conceptual and methodological framework to rationalize, organize, and adapt available resources to the delivery of health services. The methods are essential to the organized delivery of health care in community based practices, organizations engaged in managed care, and responsive governmental health systems.

The basic concepts of COPC were initially implemented in South Africa during the early 1940's by Sidney and Emily Kark with the creation of community health centers. These centers

promoted a reorientation of health services at the community level through a unique linkage between individual clinical care and public health. They served as a laboratory for teaching and training health professionals.

Since that time, COPC has been taught and practiced in a number of settings around the world. Significantly it has been an important element in the Community Health Center movement, the Indian Health Service, and a number of urban health departments in the United States as well as a variety of public health and primary care systems around the world. Developments in computer-based information management, mobile health, geographic information systems, and qualitative information gathering techniques have proved important assets to COPC practice.

The Concept of COPC

The essence of COPC is the planning and delivery of health care to a defined community in response to the defined needs of that community. To do this successfully requires the planned integration of the classical public health roles of health promotion and disease prevention at population levels with the delivery of primary health care, which focuses on the clinical treatment of disease and its sequelae. COPC recognizes that, in line with the World Health Organization definition of health as being far more than the absence of disease, a clinical practice should be responsive to the broad health needs of the community and should be flexible enough to respond to changes in those needs. COPC can be defined as a continuous process by which primary care is provided to a defined community on the basis of its assessed health needs through the planned integration of public health with clinical practice. The COPC program curriculum will teach a six step process as follows:

- 1. Community definition
- 2. Community characterization
- 3. Problem prioritization
- 4. Detailed assessment
- 5. Intervention
- 6. Evaluation

The overall curriculum is designed to give the learner the necessary public health tools to apply the principles of COPC in the context of community health practice and to be well educated in the disciplines of applied public health.

COMPETENCIES

Upon completion of the MPH, COPC Program students should possess the following functional competencies:

- Communicate and discuss the principles and methods of COPC.
Students should have the knowledge and understanding to be able to discuss the principles of COPC and describe the 6 steps which are

- 1. defining the community,
- 2. characterizing the community,
- 3. prioritizing community health issues and problems,
- 4. conducting a detailed assessment of the priority health issue,
- 5. planning and implementing COPC interventions, and
- 6. evaluating the interventions. Overarching principles include community participation and partnership. Students should be capable of communicating these to audiences with different educational levels and cultural backgrounds.

Relevant Courses

PUBH 6510	COPC Principles and Practice
PUBH 6503	Intro to PubHlth Commnctn&Mktg
PUBH 6512	Comm-OrientedPrimryCarePol&lss
PUBH 6532	Commnty Org,Devlpmnt&Advocacy

- Define, characterize communities and identify its health needs which will be the focus of a COPC practice. Students should be able to define clearly the communities that will become the focus of the COPC practice and interventions. The methods will include combining epidemiological and statistical approaches with community-based participatory methods. Specific techniques include the use of geographic information systems.

Relevant Courses

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6262	Intro-Geog Information Systems
PUBH 6510	COPC Principles and Practice
PUBH 6530	Qual Methods/Hlth Promotion
PUBH 6512	Comm-OrientedPrimryCarePol&lss
PUBH 6514	Preventing Health Disparities

- Prioritize community health issues using the principles of COPC.
Students should be able to assist community-based organizations, health clinics, and constituent communities prioritize health issues using participatory methods and the principles of COPC. The prioritization process will include the use of democratic scoring systems and methods to gather qualitative information from the community through key informant interview and community forums.

Relevant Courses

PUBH 6510	COPC Principles and Practice
PUBH 6530	Qual Methods/Hlth Promotion

PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6550	Maternal & Child Health I
PUBH 6516	Community Health InfoResources
PUBH 6560	School Health and Safety
PUBH 6532	Commnty Org,Devlpmnt&Advocacy

- Gather best-practices models for community-based interventions and the necessary quantitative and qualitative information for implementation in the focus community. Students should be capable of gathering and assessing best-practices models to address the priority health issues from the focus community as well as from distant communities facing similar issues. Furthermore, students should be capable of gathering and analyzing the necessary quantitative and qualitative information to adapt, implement and disseminate the best-practices models.

Relevant Courses

PUBH 6400	Global Health Frameworks
PUBH 6510	COPC Principles and Practice
PUBH 6503	Intro to PubHlth Commnctn&Mktg
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6550	Maternal & Child Health I
PUBH 6514	Preventing Health Disparities
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
PUBH 6516	Community Health InfoResources
PUBH 6560	School Health and Safety

- Implement individual behavior change interventions in clinical settings*
Students should have the knowledge to deliver effective brief behavior change counseling, such as motivational interviewing to patients in community or clinic settings. Students should gain the skills to integrate these methods into an intervention to impact the health of a community.

Relevant Courses

PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss

- Develop skills to manage community health organizations
Students should be able to develop budgets for community health organizations, engage in workflow redesign, design staffing plans, develop communication plans, determine

return on investment for new innovations, and develop grant proposals.

Relevant Courses

PUBH 6513	Community Health Management
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- Develop and implement interventions using COPC principles including community participation and partnership
Students should have the knowledge to develop and implement community-based interventions by demonstrating leadership and organizational skills. Specific skills include effective communication with stake-holders, effective planning and implementation of programs, and management of resources. Most important are the skills to work in partnership with community members and organizations.

Relevant Courses

PUBH 6400	Global Health Frameworks
PUBH 6510	COPC Principles and Practice
PUBH 6503	Intro to PubHlth Commnctn&Mktg
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6513	Community Health Management
PUBH 6500	Planning and Implementing Health Promotion Programs

- Evaluate and analyze community-based interventions and COPC programs
Students should have the ability to develop, plan, implement and interpret evaluations of COPC interventions and other community-based interventions. Students should be able to analyze the results of the evaluations and determine methods to improve the interventions by analyzing the strengths and weaknesses in context of the COPC process.

Relevant Courses

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6510	COPC Principles and Practice
PUBH 6530	Qual Methods/Hlth Promotion
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
PUBH 6504	Social and Behavioral Science Research Methods

- Identify, analyze, and discuss the role of COPC in underserved within vulnerable communities.
Students should have the knowledge, skills, and understanding to be able to identify and discuss ways in

which COPC can be applied in underserved and medically vulnerable communities including both urban and rural communities. Students should be able to analyze and evaluate the role of the COPC process within the context of clinical service delivery and public health practice in underserved and medically vulnerable communities.

Relevant Courses

PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6513	Community Health Management
PUBH 6550	Maternal & Child Health I
PUBH 6514	Preventing Health Disparities
PUBH 6504	Social and Behavioral Science Research Methods

- Develop and Implement a COPC process in clinical health services and community-based organizations and settings. Students should have the knowledge and skills to be able to develop and implement a COPC process within community-based organizations, especially community-based health care organizations. Students should be capable of understanding the organizational structure, basic policies and regulations, and resources to develop and plan a COPC process.

Relevant Courses

PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6513	Community Health Management

- Analyze policies, issues, and programs that impact COPC practice. Students should be able to analyze policies, issues, and programs on a local, regional and national level that impact COPC practice and be able to discuss its effects or potential effects especially to health services, community-based organizations and underserved communities.

Relevant Courses

PUBH 6400	Global Health Frameworks
PUBH 6503	Intro to PubHlth Commnctn&Mktg
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6513	Community Health Management
PUBH 6550	Maternal & Child Health I
PUBH 6514	Preventing Health Disparities

PUBH 6560	School Health and Safety
PUBH 6532	Commnty Org,Devlpmnt&Advocacy

- Develop skills to implement, evaluate and publish the results of a COPC intervention in a peer reviewed journal. Students should be able to design, implement, evaluate and publish the results of a CE intervention to improve health outcomes and patient experience while lowering health care costs and diminishing health disparities.

Relevant Courses

PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6516	Community Health InfoResources
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6504	Social and Behavioral Science Research Methods

REQUIREMENTS

Course Requirements

There are no program specific pre-requisites for entering the COPC Program, other than a bachelor's degree or higher degree. This program is appropriate for anyone (clinicians and non-clinicians) with an interest health care innovation and the management of community health programs from the grass-roots level to the policy level. This program seeks individuals especially interested in working with vulnerable populations to eliminate health disparities through trans-disciplinary teams.

MPH students who select the COPC Program enroll in MPH Core Courses which include Core courses (15 credits), Department-Specific courses (9 credits), Program-Specific courses (14 credits), electives (3 credits). PA and MD students may waive out of 5 of the required credits. The total 45 credit degree program includes a Practicum (2 credits) and a Culminating Experience (2 credits), where students apply their didactic education in a real-world setting.

Begin planning Practicum during Year 1; complete Culminating Experience in Year 2.

Program Requirements

Required Core Courses:

PUBH 6001	BiologicalConcepts/PublicHlth
or PUBH 6591	PA/MPH Clin Leadership Seminar
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology

PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth
Required Departmental Courses:	
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
PUBH 6503	Intro to PubHlth Commnctn&Mktg
Required Program Courses:	
PUBH 6504	Social and Behavioral Science Research Methods
PUBH 6510	COPC Principles and Practice
PUBH 6512	Comm-OrientedPrimryCarePol&Iss
PUBH 6514	Preventing Health Disparities
PUBH 6513	Community Health Management
PUBH 6516	Community Health InfoResources
Elective Credits - Any SPH Graduate Course(s)	
Recommended Electives	
PUBH 6534	Comm-Based Participatory Res
PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6262	Intro-Geog Information Systems
PUBH 6530	Qual Methods/Hlth Promotion
PUBH 6532	Commnty Org,Devlpmnt&Advocacy
HSML 6204	Quality&PerformanceImprovement
Other Required Courses:	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.

4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF HEALTH PROMOTION

Program Director C.Sparks

Practicum Director T. Henry

Mission Statement

The mission of the Master of Public Health degree in Health Promotion at the George Washington School of Public Health and Health Services is to train students to enhance and protect the health of the public. The program is designed to assist individuals to become responsible and productive public health professionals who are capable of assessing, implementing, managing and evaluating health promotion and health education programs for the public and for at-risk populations. The required courses as well as the suggested electives are intended to train students in social and behavioral approaches and applications for improving public health using interventions at the individual, group, organizational and societal level.

Goals

The goals of this educational program are to provide and improve:

- Knowledge of and ability to use social and behavioral theory and behavior change models and strategies that have been shown to be successful in improving health behaviors and practices for a variety of populations.
- Knowledge and skills to assess needs for health interventions for the general public as well as at-risk populations.
- Ability to plan, design, implement, evaluate and communicate programs and research targeted toward health promotion and/or disease prevention for the public.
- Ability to advocate for improvements in social practices, policy and law that will provide supportive environments for the improvement of public health.
- Utilization of structures and resources of organizations and governments to create healthy environments that promote health.

COMPETENCIES

The competencies for the Health Promotion Program are based on the Association of Schools of Public Health (ASPH) competencies in social and behavioral health, as well as the National Health Educator Competencies that students need to qualify at the master's level as certified health education specialists (CHES) which are recognized by the Society for Public Health Education. Upon Completion of the Health Promotion Program should possess the following seven functional competencies:

- Assess the individual, community, organizational and societal needs of the general public and at-risk populations. Students should be able to access and assess existing health related data and data sources on the health and well-being of a variety of populations. Students should be able to collect health related data, distinguish between those factors that foster or hinder health and wellbeing, and assess learning literacy and learning styles that influence learning. They should be able to infer needs of target populations from an assessment of health data, assess the environmental and political climate that advance or inhibit health program goals, and determine priorities for health interventions.
- Plan health promotion/education strategies, interventions and programs that are theory based and evidence based and are culturally appropriate to improve the health of the public. Student should have the ability to involve community participants and organizations in planning programs, incorporate the results of needs assessments into the planning process, formulate appropriate and measurable program objectives, develop a program plan with a logical scope and sequence, design strategies, interventions and programs that are consistent with the program objectives, select appropriate strategies to meet objectives and assess factors that may affect program implementation. They should be able to appraise the appropriateness of resources and materials relative to program objectives and revise objectives as needs change.
- Implement health promotion and health education strategies, interventions and programs to meet the health needs of the public. Students should have the knowledge on how to implement planned programs, to initiate a plan of action, select methods that best meet the program objectives and assess program implementation materials. They should be able to apply individual or group process methods to learning situations in order to facilitate behavior changes and to employ appropriate strategies for handling controversial health issues. They should be able to demonstrate a wide range of strategies for designing, conducting and field testing curricula and training programs in health promotion and education.
- Conduct evaluation of health promotion program and conduct research related to health promotion and health education. Students should have the ability to develop plans for evaluation and research based on best practices in health promotion, conduct evaluations of relevant literature, design and/or evaluate existing data collection instruments for reliability and validity, select samples and compute appropriate sample sizes to show program effects of a variety of health interventions. They should be able to involve the public, where appropriate, in participatory evaluation of programs. They should be able to identify performance standards and use appropriate methods for data collection and analysis for evaluating program effectiveness, interpret results from evaluation and research and infer implications from evaluation and research. They should be able to disseminate evaluation findings in community and professional settings.
- Administer and manage health promotion strategies, interventions and programs. Students should have the knowledge to exercise organizational leadership, conduct strategic planning, demonstrate leadership, apply ethical standards to the administration of programs and practice of public health, and communicate and foster cooperation among the community and public to meet health needs. They should be able to function as program managers, develop work plans, staffing plans and budgets to support program requirements, and ensure that program activities comply with existing laws and regulations. They should be able to seek and ensure program funding, manage human resources, and obtain acceptance and support for health programs.
- Develop communication campaigns and strategies to disseminate health promotion information through media channels. Students should have the capability to use health related information resources, select resource materials for dissemination, analyze and respond to current and future health needs, and apply a variety of communication methods and techniques in communities. They should be able to assess appropriateness of health education messages, techniques and dissemination to promote health and well being.
- Develop and implement advocacy strategies to improve law, policy and social norms that support public health. Students should be able to implement organizational and social change strategies for initiatives that mobilize communities to advocate for changes in the environment that support health. They should be able to use health and program evaluation data to advocate for normative and policy change.

REQUIREMENTS

MPH students who select the health promotion program enroll in core courses (15 credits), prevention and community health departmental core courses (9 credits) and program-specific courses and electives (17 credits). The 45-credit requirements include a 2 credit practicum in which students work in health promotion and education settings and a 2 credit capstone experience in which students demonstrate their mastery of their training in health promotion.

Begin planning Practicum during Year 1; complete Culminating Experience in Year 2.

Program requirements

Required core courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth

Required department courses:

PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Eval-HlthPromDiseasePrevPgrms
PUBH 6503	Intro to PubHlth Commnctn&Mktg

Required program courses:

PUBH 6530	Qual Methods/Hlth Promotion
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6532	Commnty Org,Devlpmnt&Advocacy
PUBH 6504	Social and Behavioral Science Research Methods

Electives:

6 credits from the following:

PUBH 6514	Preventing Health Disparities
PUBH 6516	Community Health InfoResources
PUBH 6535	Promotion of Mental Health
PUBH 6536	Workplace Health Promotion
PUBH 6537	Health Promotion & Aging

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6556	Maternal & Child Nutrition
PUBH 6560	School Health and Safety
PUBH 6562	Physical Activity and Obesity Interventions: From the Individual to the Environment
PUBH 6573	Media Advocacy for Public Hlth
PUBH 6599	Topics in PCH
Any other SPH Elective(s)	

Practicum and culminating experience:

PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF MATERNAL AND CHILD HEALTH

Program Director A. Vyas

Faculty Advisors M. Napolitano, K. McDonnell, K. Roche, M. Ruiz

Mission Statement

The Maternal and Child Health program at the Milken Institute School of Public Health (SPH) is a Master of Public Health (MPH) program designed to train individuals to become responsible and productive public health professionals with an emphasis on MCH populations. This program investigates maternal and child health from a multi-disciplinary perspective that integrates the life course, biological, demographic, epidemiological, developmental, environmental, behavioral

and social characteristics that are unique to the health and well-being of women, children and families.

Goals

The goals of this educational program are to provide and improve:

- Knowledge and skills to assess the health care needs of women, children, and families
- Ability to plan, design, implement, evaluate and communicate programs and research targeted toward health promotion, disease prevention among women, children, and families

COMPETENCIES

Program-Specific Competencies

The Association of Teachers of Maternal and Child Health have outlined 5 basic competency areas in MCH that our program strives to attain:

1. Scientific Basis of MCH public health practice
2. Methodological/Analytical Skills
3. Management and Communication Skills
4. Policy and Advocacy Skills
5. Values and Ethics in MCH Public Health Practice

Upon Completion of the MPH, Maternal and Child Health Program students should possess the following functional competencies:

- Assess the individual, community, organizational and societal needs of women, children, and families.
Students should be able to assess existing health related data and data sources on the health and well-being of women, children and families. Students should be able to collect health related data, distinguish between those factors that foster or hinder health and wellbeing, and infer needs of women, children and families from an assessment of health needs.

Relevant courses:

PUBH 6550	Maternal & Child Health I
PUBH 6551	Maternal & Child Health II
PUBH 6555	ReprodctvHealth:US&GloblPerspc
PUBH 6552	Women’s Health
PUBH 6553	Adolescent Health
PUBH 6557	ChildDevelopment&PublicHealth
PUBH 6556	Maternal & Child Nutrition
PUBH 6560	School Health and Safety
PUBH 6554	Children & Youth/Special Needs

PUBH 6561	Maternal&ChildHlthPolAnalysis
PUBH 6530	Qual Methods/Hlth Promotion
PUBH 6558	Women, Gender and Health

- Plan MCH related strategies, interventions and programs to improve the health of women, children and families.
Student should have the ability to formulate appropriate and measurable program objectives, involve people and organizations in planning, develop a program plan with a logical scope and sequence, design strategies, interventions and programs that are consistent with the program objectives, select appropriate strategies to meet objectives and assess factors that may affect program implementation.

Relevant courses:

PUBH 6007	Social&BehaviorAppr-Pub.Hlth
PUBH 6551	Maternal & Child Health II
PUBH 6555	ReprodctvHealth:US&GloblPerspc
PUBH 6514	Preventing Health Disparities
PUBH 6561	Maternal&ChildHlthPolAnalysis
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6501	Eval-HlthPromDiseasePrevPgrms

- Implement strategies, interventions and programs to meet the health needs of women, children and families.
Students should have the knowledge on how to implement planned programs, to initiate a plan of action, select methods that best meet the program objectives and assess program implementation materials.

Relevant courses:

PUBH 6551	Maternal & Child Health II
PUBH 6556	Maternal & Child Nutrition
PUBH 6531	HlthPromotion/HlthCareSettings

- Conduct evaluation and research related to the health and well-being of women, children and families.
Students should have the ability to develop plans for evaluation and research, design/evaluate existing data collection instruments, interpret results from evaluation and research and infer implications from evaluation and research into the health and wellbeing of women, children and families.

Relevant courses:

PUBH 6550	Maternal & Child Health I
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PUBH 6551	Maternal & Child Health II
PUBH 6555	ReprodctvHealth:US&GloblPerspc
PUBH 6552	Women's Health
PUBH 6557	ChildDevelopment&PublicHealth
PUBH 6556	Maternal & Child Nutrition
PUBH 6560	School Health and Safety
PUBH 6554	Children & Youth/Special Needs
PUBH 6514	Preventing Health Disparities
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
PUBH 6530	Qual Methods/Hlth Promotion
PUBH 6558	Women, Gender and Health

- Administer MCH strategies, interventions and programs. Students should have the knowledge to exercise professional leadership, conduct strategic planning, apply ethical standards to the administration of programs and practice of public health, and communicate and foster cooperation among the community and public to meet the needs of women, children and families.

Relevant courses:

PUBH 6553	Adolescent Health
PUBH 6514	Preventing Health Disparities
PUBH 6531	HlthPromotion/HlthCareSettings
PUBH 6532	Commnty Org,Devlpmnt&Advocacy

- Communicate and advocate for health and well-being of women, children and families. Students should have the capability to use health related information resources, select resource materials for dissemination, analyze and respond to current and future needs in MCH, apply a variety of communication methods and techniques, assess appropriateness of health education messages, techniques and dissemination, influence health policy to promote the health and well being of women, children and families.

Relevant courses:

PUBH 6550	Maternal & Child Health I
PUBH 6553	Adolescent Health
PUBH 6514	Preventing Health Disparities
PUBH 6561	Maternal&ChildHlthPolAnalysis

PUBH 6532	Commnty Org,Devlpmnt&Advocacy
PUBH 6503	Intro to PubHlth Commnctn&Mktg
PUBH 6558	Women, Gender and Health

- Knowledge and skills to incorporate a life course perspective to the health and well-being of women, children and families.

Relevant courses:

PUBH 6550	Maternal & Child Health I
PUBH 6551	Maternal & Child Health II
PUBH 6555	ReprodctvHealth:US&GloblPerspc
PUBH 6552	Women's Health
PUBH 6553	Adolescent Health
PUBH 6557	ChildDevelopment&PublicHealth
PUBH 6556	Maternal & Child Nutrition
PUBH 6554	Children & Youth/Special Needs
PUBH 6558	Women, Gender and Health

REQUIREMENTS

MPH students who select the Maternal and Child Health Program enroll in Core Courses (15 credits), Department and Program-Specific Required Courses (15 credits), Program-Specific Electives (8 credits), and an additional 3 credits of any SPH elective(s). The 45 total credit requirements include a Practicum and Culminating experience (4 credits), where students apply their classroom education in a Maternal and Child Health organization and/or research endeavor.

Begin planning Practicum during Year 1; complete Culminating Experience in Year 2.

Program Requirements

Required core courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth

Required department courses:

PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
PUBH 6503	Intro to PubHlth Commnctn&Mktg
Required program courses:	
PUBH 6550	Maternal & Child Health I
PUBH 6551	Maternal & Child Health II
Electives:	
Select 8 credits from the following:	
PUBH 6552	Women's Health
PUBH 6553	Adolescent Health
PUBH 6555	ReprodctvHealth:US&GloblPerspc
PUBH 6554	Children & Youth/Special Needs
PUBH 6556	Maternal & Child Nutrition
PUBH 6557	ChildDevelopment&PublicHealth
PUBH 6558	Women, Gender and Health
PUBH 6560	School Health and Safety
Any SPH graduate course(s)	
Practicum and culminating experience:	
PUBH 6014	Practicum
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

MASTER OF PUBLIC HEALTH IN THE FIELD OF PUBLIC HEALTH COMMUNICATION AND MARKETING

Program Director L. Abroms

Practicum Director K. Pomerantz

Mission

Based on an ecological model of health, the mission of this program is to educate public health professionals to use communication and marketing as strategic tools to influence people, places, and environmental conditions in ways that advance public health objectives.

Goals

Our graduates will possess the skills necessary to become highly effective public health practitioners and leaders. Their specific expertise in the strategic use of communication and marketing tools will enable them to work collaboratively with a broad range of other public health experts to plan high-impact health enhancement initiatives, and to implement or supervise the implementation of the communication and marketing components of public health initiatives.

Specifically, our students will become proficient at developing, implementing and evaluating:

- Communication programs that help people make sound health decisions and effectively manage their health behaviors.
- Marketing programs that improve the health capacity of communities by enhancing the competitiveness of the healthful (versus unhealthful) products and services offered to community members.
- Communication programs that promote the adoption of policies – in the public and private sector – which enhance health.

COMPETENCIES

Program-Specific Competencies

Upon completion of the MPH Program in Public Health Communication and Marketing, students will be able to:

- Apply an ecological framework to assess and promote population health.
Students will be able to identify and assess people-based and place-based causes of health and disease. They will also be able to apply this information to develop strategic plans, and to recommend and develop effective public health interventions. This includes, but is not limited to, the ability to understand and explain the potential and limitations of public health communication and marketing campaigns.

Relevant courses:

PUBH 6503	Intro to PubHlth Commnctn&Mktg
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
PUBH 6574	Pub Hlth Branding Theory&Pract
PUBH 6572	Marketing Rsch for Publ Health
PUBH 6570	AdvPubHlthComm: Theory & Prac
PUBH 6571	Social Mktg: Theory & Practice
PUBH 6573	Media Advocacy for Public Hlth

- Use marketing research to develop and improve public health programs.
Students will understand and be able to explain the value of marketing research methods in creating public health programs. They will be grounded in public health research and evaluation methodologies and apply them in PHCM. Moreover, they will be able to apply a range of qualitative and quantitative marketing research techniques in creating, monitoring and continuously improving PHCM and other public health initiatives.

Relevant courses:

PUBH 6503	Intro to PubHlth Commnctn&Mktg
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
PUBH 6502	Practical Data Analysis: PCH
PUBH 6574	Pub Hlth Branding Theory&Pract
PUBH 6572	Marketing Rsch for Publ Health

- Develop communication programs to promote individual- and population-level behavior change.
Students will understand the relevance of - and be able to apply - a range of communication, cognitive and behavioral science theories in the effective design and delivery of public health communication messages and campaigns. This includes the ability to use formative research to design effective health messages, and the ability to plan and implement effective means of delivering health information to targeted populations.

Relevant courses:

PUBH 6503	Intro to PubHlth Commnctn&Mktg
PUBH 6574	Pub Hlth Branding Theory&Pract
PUBH 6570	AdvPubHlthComm: Theory & Prac

- Develop marketing programs to promote individual- and population-level behavior change and improve the health capacity of communities.

Students will be able to plan and implement social marketing programs targeting consumers (i.e., the people most affected by the burden of the public health problem). They will also be able to plan and implement social marketing programs that create environmental change by targeting the people who make decisions about products and services offered, and policies implemented, in various community settings. This includes developing effective distribution channels for public health products and services, and integrated marketing communication campaigns to support them.

Relevant courses:

PUBH 6503	Intro to PubHlth Commnctn&Mktg
PUBH 6574	Pub Hlth Branding Theory&Pract
PUBH 6571	Social Mktg: Theory & Practice

- Develop communication programs to promote the adoption of policies that enhance health.
Students will understand the relevance of - and be able to apply - a range of theories and techniques to advocate for policies that advance the public's health. This includes the ability to effectively design messages for use in policy advocacy campaigns, and to plan and implement effective means of implementing policy advocacy campaigns.

Relevant courses:

PUBH 6503	Intro to PubHlth Commnctn&Mktg
PUBH 6570	AdvPubHlthComm: Theory & Prac
PUBH 6573	Media Advocacy for Public Hlth

- Evaluate public health communication and marketing initiatives.
Students will be able to prepare program goals and objectives for health enhancement programs. They will also be able to conduct basic evaluations of public health communication and marketing programs, including working with stakeholders to plan and implement process and outcome evaluations of public health communication and marketing initiatives.

Relevant courses:

PUBH 6503	Intro to PubHlth Commnctn&Mktg
PUBH 6501	Eval-HlthPromDiseasePrevPrgrms
PUBH 6574	Pub Hlth Branding Theory&Pract
PUBH 6572	Marketing Rsch for Publ Health

REQUIREMENTS

Course Requirements

MPH students who select the Public Health Communication and Marketing (PHCM) Program enroll in Core Courses (15 credits), Department- and Program-Specific Required Courses (16-18 credits) and program-specific electives (6 credits), and SPH Electives (2-4 credits). The 45 credit hour requirement includes both Practicum and Capstone experiences (4 credits), where students apply their didactic education in real world settings. The specific course requirements are presented in the attached Program at a Glance sheet.

Begin planning Practicum during Year 1; complete Culminating Experience in Year 2.

Program Requirements

Required core courses:

PUBH 6001	BiologicalConcepts/PublicHlth
PUBH 6002	Biostatistical Applic for PubH
PUBH 6003	Prin & Practice/Epidemiology
PUBH 6004	Env/Occ Hlth-Sustainable World
PUBH 6006	Mgt & Policy Approaches to PH
PUBH 6007	Social&BehaviorAppr-Pub.Hlth

Required department courses:

PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Eval-HlthPromDiseasePrevPgrms
PUBH 6503	Intro to PubHlth Commnctn&Mktg

Required program courses:

PUBH 6570	AdvPubHlthComm: Theory & Prac
PUBH 6571	Social Mktg: Theory & Practice
PUBH 6502	Practical Data Analysis: PCH

OR

PUBH 6504	Social and Behavioral Science Research Methods
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Program specific electives:

6 credits from the following:

PUBH 6572	Marketing Rsch for Publ Health
PUBH 6573	Media Advocacy for Public Hlth

or PUBH 6532 Commnty Org,Devlpmnt&Advocacy

PUBH 6532 Commnty Org,Devlpmnt&Advocacy

PUBH 6574 Pub Hlth Branding Theory&Pract

PUBH 6575 CommunSkills for PubHProfsnls

Electives:

4 credits from the following:

PUBH 6249 StatPackages/DataMgt&DataAnlys

PUBH 6315 Intro-Health Policy Analysis

PUBH 6430 Theories for Global Health Communication Interventions

PUBH 6431 Global Health Communication Strategies and Skills

PUBH 6512 Comm-OrientedPrimryCarePol&Iss

PUBH 6515 High Risk&Special Populations

PUBH 6516 Community Health InfoResources

PUBH 6530 Qual Methods/Hlth Promotion

PUBH 6531 HlthPromotion/HlthCareSettings

PUBH 6536 Workplace Health Promotion

PUBH 6537 Health Promotion & Aging

PUBH 6552 Women's Health

PUBH 6553 Adolescent Health

PUBH 6556 Maternal & Child Nutrition

Select any SPHHS course(s) - with advisor's approval

Practicum and culminating experience:

PUBH 6014 Practicum

PUBH 6015 Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits are required.
2. Course requirements: Successful completion of the core courses and the program-specific courses are required.
3. Grade point requirement: A 3.0 (B average) overall grade point average is required.
4. Time limit requirement: The degree must be completed within four years.
5. Transfer credit policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be

transferred to the Master of Public Health program. Up to 18 credits may be transferred to the Master of Public Health from the SPH graduate certificate. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

DOCTOR OF PUBLIC HEALTH IN THE FIELD OF HEALTH BEHAVIOR

Program Director M. Turner

Mission

The mission of the Department of Prevention and Community Health in graduating Doctoral-level professionals within this specialty field is to create a cadre of professionals who are uniquely equipped to provide leadership at the in the field of Health Behavior. The DrPH program in Health Behavior is based on the ecological model of health and well-being and is aimed at understanding and having an impact on the health of populations and cultures, with special emphasis upon underserved populations. Our graduates are prepared to apply their research and analytic skills to a range of implementation, evaluation, and advocacy needs of various cultural and socioeconomic groups and communities.

Program Policies and Procedures

For program policies and procedures, please refer to the Doctor of Public Health Handbook and other resources located on the DrPH in the field of Health Behavior website (<https://publichealth.gwu.edu/programs/health-behavior-drph>).

COMPETENCIES

DrPH Core Competencies

The Doctor of Public Health (DrPH) Program prepares professionals to assume national and international leadership positions in environmental and occupational health, global health, health behavior, and health policy. The field of public health provides unique insights into the complex interrelationships between health, politics, and human development. It enables professionals to address public health issues by marshalling research and analytic skills to develop innovative approaches to understand health and to promote and advocate for improved health outcomes. Upon completion of the DrPH, students will demonstrate ability in these core competencies:

- Analyze a public health problem and determine appropriate sources of data and methods for problem identification, program planning, implementation, monitoring, and evaluation.

Relevant Courses

PUBH 6249	StatPackages/DataMgt&DataAnlys
PUBH 6260	Adv DataAnalysis-Public Health

PUBH 8417	Qual Research Methods&Analysis
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PUBH 8419	Measrmnt/PubHlth&HlthSrvcsRes
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- Develop and analyze hypotheses that can be tested by appropriate quantitative or qualitative research designs and methodologies.

Relevant Courses

PUBH 6247	Design of Health Studies
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PUBH 6252	Advanced Epidemiology Methods
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PUBH 8416	Study Design & Evaluation Methods
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PUBH 8417	Qual Research Methods&Analysis
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PUBH 8422	AdvHlthCare&PubcHlthRsrchDes
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- Synthesize and evaluate research conducted by others.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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PUBH 8416	Study Design & Evaluation Methods
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PUBH 8417	Qual Research Methods&Analysis
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PUBH 8422	AdvHlthCare&PubcHlthRsrchDes
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- Design strategies to accurately and effectively describe public health, economic, administrative, legal, social, political, and cultural implications of different health policy options.

Relevant Courses

PUBH 6247	Design of Health Studies
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PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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PUBH 8417	Qual Research Methods&Analysis
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PUBH 8419	Measrmnt/PubHlth&HlthSrvcsRes
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- Design grant proposals to address public health problems.

Relevant Courses

PUBH 8416	Study Design & Evaluation Methods
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PUBH 8422	AdvHlthCare&PubcHlthRsrchDes
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- Present public health data and research syntheses to scientific and professional audiences and the public.

Relevant Courses

PUBH 8407	AdvTpc-HlthLdrshp/IntlSettings
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PUBH 8422 AdvHlthCare&PublHlthRsrchDes

- Defend the feasibility and expected outcomes of different policy options and transform them into organizations, plans, processes, and programs. Relevant courses:

Relevant Courses

PUBH 6247 Design of Health Studies

PUBH 8402 Ldrshp/PublicHlthPractc&Policy

PUBH 8417 Qual Research Methods&Analysis

PUBH 8422 AdvHlthCare&PublHlthRsrchDes

- Appraise the dynamic forces that contribute to cultural diversity and develop responsive plans and programs.

Relevant Courses

PUBH 6247 Design of Health Studies

PUBH 6252 Advanced Epidemiology Methods

PUBH 8402 Ldrshp/PublicHlthPractc&Policy

PUBH 8417 Qual Research Methods&Analysis

- Assess the determinants of health and illness, factors that contribute to health promotion and disease prevention, and factors that influence the use and cost of public health services in a population.

Relevant Courses

PUBH 6249 StatPackages/DataMgt&DataAnlys

PUBH 6252 Advanced Epidemiology Methods

PUBH 6260 Adv DataAnalysis-Public Health

- Develop and defend a budget statement that presents programmatic fiscal requirements to achieve stated objectives.

Relevant Courses

PUBH 8402 Ldrshp/PublicHlthPractc&Policy

- Describe the theory of organizational structure and its relation to professional practice.

Relevant Courses

PUBH 6001 BiologicalConcepts/PublicHlth

- Support a culture of ethical standards of conduct in the research process and within organizations and communities.

Relevant Courses

PUBH 8402 Ldrshp/PublicHlthPractc&Policy

PUBH 8416 Study Design & Evaluation Methods

PUBH 8422 AdvHlthCare&PublHlthRsrchDes

- Lead a team of diverse professionals reflecting shared values and vision to achieve specific objectives.

Relevant Courses

PUBH 8402 Ldrshp/PublicHlthPractc&Policy

Program-Specific Competencies

On completion of the DrPH in the field of Health Behavior program, students will possess the following functional competencies and subject area knowledge:

- Evaluate research tools including research design, statistical analysis data collection instruments and measurement systems. Evaluation will be based on course requirements (see below), answers to comprehensive examination questions, and dissertation defense.

Relevant Courses

PUBH 8408 AdvTpc-HlthBehavRes&PractcAppl

PUBH 8409 AdvTpc-Health Comm Research

PUBH 8410 Doctoral Social Mrktng Applic

PUBH 8416 Study Design & Evaluation Methods

PUBH 8417 Qual Research Methods&Analysis

PUBH 8418 Applied Statistical Analysis

PUBH 8419 Measrmnt/PublHlth&HlthSrvcsRes

PUBH 8420 Advanced Analysis & Dissemination

PUBH 8422 AdvHlthCare&PublHlthRsrchDes

- Apply epidemiological and biostatistical techniques to studies designed to assure effective practice and policy decision-making in a field within public health. Students will possess epidemiological and biostatistical concepts/ techniques necessary to successfully analyze and apply the results to epidemiological research to making and implementing complex decisions in a field within public health and related to public health practice. Evaluation based on completion of courses (see below), comprehensive examination, and dissertation defense.

Relevant Courses

PUBH 8408 AdvTpc-HlthBehavRes&PractcAppl

PUBH 8416 Study Design & Evaluation Methods

PUBH 8418	Applied Statistical Analysis
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PUBH 8420	Advanced Analysis & Dissemination
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- Assess public health problems; analyze quantitative data; and design public health studies including sampling and hypothesis testing. Evaluation based on completion of courses (see below), comprehensive examination, and dissertation defense.

Relevant Courses

PUBH 8408	AdvTpc-HlthBehavRes&PractcAppl
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PUBH 8409	AdvTpc-Health Comm Research
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PUBH 8416	Study Design & Evaluation Methods
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PUBH 8418	Applied Statistical Analysis
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PUBH 8420	Advanced Analysis & Dissemination
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- Use the basic concepts of public health practice and the philosophy of social science to justify dissertation research. Evaluation will be based on completion of appropriate courses (see below), comprehensive examination, and dissertation defense.

Relevant Courses

PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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PUBH 8408	AdvTpc-HlthBehavRes&PractcAppl
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PUBH 8409	AdvTpc-Health Comm Research
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PUBH 8410	Doctoral Social Mrktng Applic
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PUBH 8416	Study Design & Evaluation Methods
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PUBH 8418	Applied Statistical Analysis
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PUBH 8420	Advanced Analysis & Dissemination
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PUBH 8422	AdvHlthCare&PublHlthRsrchDes
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- Identify an area of interest within public health and develop a level of knowledge that will allow use of appropriate conceptual or theoretical models and build on the current state of the art in that topic area. Develop research agendas and questions. Completion of individualized study courses, doctoral seminars, and the comprehensive examination will assess preparation in this area.
- Possess graduate-level competence in Epidemiology, Biostatistics, Environmental Health, Social and Behavioral Sciences, and Health Administration. Preparation will be assessed based on completion of prior MPH degree, coursework at the graduate level (in the case of environmental health, health behavior, and health administration, these may need to be in addition to DrPH program requirements), or successfully pass an examination

to assure MPH-level competence in these core public health areas.

- Attain the skills necessary to conduct doctoral level research that involves a problem-based inquiry in a real world setting in student's specialty area of public health. Evaluation will be based on successful defense of a dissertation proposal and final dissertation.

REQUIREMENTS

Program requirements

20 credits of required foundational and research methods courses

PUBH 8401	Found PH Leadership & Practice
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PUBH 8402	Ldrshp/PublicHlthPractc&Policy
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PUBH 8416	Study Design & Evaluation Methods
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PUBH 8417	Qual Research Methods&Analysis
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PUBH 8418	Applied Statistical Analysis
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PUBH 8419	Measrmnt/PublHlth&HlthSrvcRes
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PUBH 8420	Advanced Analysis & Dissemination
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6 credits of required health behavior specialty field courses

Two of the following:

PUBH 8408	AdvTpc-HlthBehavRes&PractcAppl
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PUBH 8409	AdvTpc-Health Comm Research
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PUBH 8410	Doctoral Social Mrktng Applic
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Elective specialty field courses (sample list)

7-10 credits from the following:

PUBH 6500	Planning and Implementing Health Promotion Programs
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PUBH 6531	HlthPromotion/HlthCareSettings
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PUBH 6532	Commnty Org,Devlpmnt&Advocacy
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PUBH 6533	Design of Comm Health Surveys
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PUBH 6534	Comm-Based Participatory Res
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PUBH 6570	AdvPublHlthComm: Theory & Prac
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PUBH 6571	Social Mktg: Theory & Practice
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EDUC 8131	Case Study Research Methods
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EDUC 8140	Ethnographic Research Methods
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EDUC 8172	Multivariate Analysis
PSYC 8204	Experimental Foundations of Psychology: Biological Basis of Behavior
PSYC 8231	Development of Psychometric Instruments
PSYC 8277	Health Psychology
PSYC 8287	Current Topics in Clinical Psychology
4 credits of professional leadership courses	
PUBH 8413	Research Leadership
PUBH 8415	Instructional Leadership
Comprehensive Examination	
Dissertation Preparation & Dissertation	
8-11 credits	
PUBH 8422	AdvHlthCare&PublHlthRsrchDes
PUBH 8423	Dissertation Research

Graduation Requirements*

1. Graduate credit requirement: 60 graduate credits are required.
2. Course requirements: successful completion of the foundational and research methods courses. The program-specific specialty field courses and the professional leadership credits are required.
3. Comprehensive exam: Once the course of study is completed, students are required to pass the comprehensive exam to be officially admitted to the candidacy phase.
4. Dissertation: PUBH 8422 AdvHlthCare&PublHlthRsrchDes in addition to 6-12 dissertation research credits are required. Once the proposal has been successfully defended and dissertation research credits have been met, the oral defense may be scheduled.
5. Grade point requirement: A 3.0 (B average) overall grade point average is required.
6. Time limit requirement: The degree must be completed within eight (8) years.
7. Transfer credit policy: up to 12 graduate credits may be transferred to the DrPH degree, with program director approval. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.

COLLEGE OF PROFESSIONAL STUDIES

Dean A. Eskandarian

Associate Deans A. Ashkar, T. Marsh, C. Mokey, J. Prostko

The College of Professional Studies offers an expanding range of degree programs leading to associate's, bachelor's, and master's degrees in professional studies, along with a range of certificate programs.

The College's innovative programs are typically co-developed through collaboration among University content specialists and outside partners – government agencies, professional associations, consulting organizations, and business and industry leaders.

Programs draw from multiple academic disciplines and are delivered in flexible formats: face-to-face, online, or a blend of both.

By combining University faculty experts with accomplished practitioners, the College of Professional Studies is a catalyst for academic innovation, constructing credentials for the workforce that uphold the University's rigorous standards of academic excellence and respond to the needs of today's professionals. Professional studies degree and certificate programs are also offered to organizational clients under contract and can be presented in flexible formats, including series of short classroom-based modules and distance learning.

New programs not included in this bulletin may be found at the College of Professional Studies website (<http://www.cps.gwu.edu>).

CPS manages facilities and services for off-campus programs offered by other schools of the University. The staff of instruction includes members of the full-time faculty of the University and academically qualified adjunct faculty from the professional community. All University off-campus offerings in Maryland are approved by the Maryland State Board for Higher Education; those in Virginia are certified by the State Council of Higher Education for Virginia.

REGULATIONS

Enrollment Status

Once entered in a degree or certificate program, a student is expected to be continuously enrolled and actively engaged in fulfilling the requirements each semester of the academic year until such time as the degree is conferred or certificate completed. For fall and spring semesters you must register for one or more credit hours to maintain enrollment status. A student who must interrupt active pursuit of the degree or certificate may petition the dean, through the Program Director, for a leave of absence for a specified period of time, generally limited to one calendar year. If the petition is approved, the student must register for a leave of absence in

each fall and spring semester, following regular registration procedures. Students who discontinue their studies without being granted a leave of absence and students granted leaves who do not return to active study at the close of the period of approved absence must apply for readmission and are subject to the regulations and requirements then in force.

Time Limits

A full-time student is allowed a maximum of three calendar years (excluding time spent for taking only English for Academic Purposes courses) to complete all degree requirements from the date of the first registration as a degree student. A part-time student is allowed a maximum of five calendar years. The time limit does not include any period of registration as an unclassified student before admission to degree candidate status or any period spent on approved leave of absence. Students who do not complete degree requirements within the allowed time will have their degree candidate status terminated. They may be readmitted to degree candidate status under conditions specified by the program director and approved by the dean.

Scholarship Requirements

Undergraduate students must maintain a minimum grade-point average of 2.0 (C) and graduate students must maintain a minimum grade-point average of 3.0 (B). If a student's cumulative GPA falls below the required minimum GPA, he or she will receive an academic warning and will be allowed one semester in which to raise the GPA to the minimum required level or higher, provided that students who would mathematically be unable to raise their grade to the required minimum GPA during such following semester will not receive academic warning and will be asked to leave the program immediately. Students receiving a warning who have not raised their GPA to the minimum required level or higher within a semester following the academic warning will be dismissed from the program.

See University Regulations-Grades (p. 13) for a description of the grades available to undergraduate and graduate students.

Grade of F

A student who receives a grade of F is subject to removal from the program. If the student wishes to remain enrolled, s/he must present cause for consideration by the dean and the program director as to why continued study should be permitted. Once a grade of F is earned it remains a part of the student's permanent record and is calculated into the grade-point average. A student given the grade of F, if permitted to remain in the program, must repeat the course and achieve a passing grade (as well as maintain the required 3.0 GPA); such a repeat does not expunge the grade of F, which remains part of the student's permanent record. Failure to (i) receive permission to remain in the program and retake the failed course or (ii) achieve a passing grade upon permitted retake of a failed course will result in dismissal from the program.

Incompletes

The symbol *I* (Incomplete) indicates that a satisfactory explanation has been given the instructor for the student's inability to complete the required course work during the semester of enrollment. At the option of the instructor, the symbol *I* may be recorded if a student, for reasons beyond the student's control, is unable to complete the work of the course, and if the instructor is informed of, and approves, such reasons before the date when grades must be reported. This symbol may be used only if the student's prior performance and class attendance in the course have been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded *F*, Failure. If acceptable reasons are later presented to the instructor, that instructor may initiate an appropriate grade change. Instructor and student must sign an Incomplete Agreement available through the dean's office which sets forth the requirements and due dates for successful completion of the course. The course work must be completed within the designated time period agreed upon by the instructor and student in the Incomplete contract, but no more than one calendar year from the end of the semester in which the course was taken. All students who receive an Incomplete must maintain active student status during the subsequent semester(s) in which course work is being completed. If not registered in other classes during this period, the student must register for Continuous Enrollment status.

When work for the course is completed, the instructor will submit the final grade to the Office of the Registrar and, beginning with courses taken in the Fall 2014 semester, the final grade will replace the symbol *I*. If work for the course is not completed within the designated time, the grade will be automatically converted to a grade of *F*, Failure, 0 quality points, and the grade-point average and academic standing recalculated.

For courses taken through the Summer 2014 term, the grade earned will be indicated in the form of *I*, followed by the grade. The indication of *I* cannot be removed and remains on the student's permanent academic record even after the course has been successfully completed.

Transfer of Credit

A maximum of one-quarter of the credit hours of graduate course work required for a degree may be approved for transfer to a graduate program in the College of Professional Studies from enrollment in nondegree status at GW or from another degree-granting school of this University or another accredited college or university. For a transfer of credit to be approved, *all* of the following conditions must be met: the course work must be from an accredited institution and must have been taken within the two years prior to matriculation; it must be approved as part of the student's program of studies; it must not have been applied to the completion of requirements for another degree; it must be post-baccalaureate graduate-level course work; and the

student must have received a grade of *B* or better in each course for which a transfer credit is requested. Requests for transfer credit must be submitted in writing and approved by the program director and the dean during the student's first year in the program. An official transcript of the course work must be on file before the request can be considered.

Once enrolled in the College of Professional Studies, students are not permitted to transfer course work taken outside the University, except under extraordinary circumstances; permission must be obtained in advance from the dean.

Provisional Admission

Applicants with credentials that are weaker than expected for the program of study, but who nonetheless show promise of successful work, are occasionally granted provisional admission by the program director/admissions committee. While on provisional status, students must meet the requirements set forth in their admission letter. Students who do not meet these requirements are dismissed from the program.

Readmission

The College of Professional Studies will not review any application for readmission to a program by a student who was dismissed from such program (or any other program at the college or course of study at the university) until at least one (1) year has passed since the dismissal of such student.

Academic Integrity

The University community, in order to fulfill its purposes, must establish and maintain guidelines of academic behavior. All members of the community are expected to exhibit honesty and competence in their academic work. Incoming students have a special responsibility to acquaint themselves with, and make use of, all proper procedures for doing research, writing papers, and taking examinations. Members of the community will be presumed to be familiar with the proper academic procedures and held responsible for applying them. Deliberate failure to act in accordance with such procedures will be considered academic dishonesty. Acts of academic dishonesty are a legal, moral, and intellectual offense against the community and will be prosecuted through the proper University channels, possibly resulting in dismissal from the program together with other university sanctions. The University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity>) can be found at the Office of Academic Integrity (<http://studentconduct.gwu.edu>).

UNDERGRADUATE

Bachelor's completion programs

- Bachelor of Professional Studies with a major in integrated information science and technology (p. 294)
- Bachelor of Professional Studies with a major in police and security studies (p. 295)

Dual degree programs

- Bachelor of Arts with a major in political communication and Master of Professional Studies in the field of political management (p. 296)
- Bachelor of Arts with a major in political science and Master of Professional Studies in the field of legislative affairs (p. 297)
- Bachelor of Arts with a major in political science and Master of Professional Studies in the field of political management (p. 298)

GRADUATE

Master's programs

Admission Requirements

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Applicants should have a strong academic background, normally with a B average or better (3.0 GPA on a 4.0 scale). Additional application requirements can be found on the Graduate Programs Finder (<http://www.gwu.edu/all-graduate-programs>).

- Master of Professional Studies in the field of landscape design (p. 299)
- Master of Professional Studies in the field of law firm management
- Master of Professional Studies in the field of paralegal studies (p. 300)
- Master of Professional Studies in the field of paralegal studies with a concentration in healthcare corporate compliance (p. 301)
- Master of Professional Studies in the field of public leadership (p. 301)
- Master of Professional Studies in the field of publishing
- Master of Professional Studies in the field of security and safety leadership
- Master of Professional Studies in the field of strategic cyber operations and information management
- Master of Professional Studies in the field of sustainable urban planning (p. 304)

The Graduate School of Political Management, through the College of Professional Studies, offers the following:

- Master of Professional Studies in the field of advocacy in the global environment (p. 305)
- Master of Professional Studies in the field of legislative affairs (p. 306)
- Master of Professional Studies in the field of political management (p. 306)
- Master of Professional Studies in the field of political communication and governance (p. 307) *Offered only in Spanish*

- Master of Professional Studies in the field of strategic public relations (p. 308)

CERTIFICATES

The College of Professional Studies offers the following graduate certificates. Requirements are listed at www.cps.gwu.edu (<http://www.cps.gwu.edu>). Note that Strategic Cyber Security Enforcement is available only to students enrolled in the M.P.S. in safety security and leadership online program. In addition to those listed, graduate certificates in political management and strategic governance and in strategic communications campaigns are offered in Spanish to closed cohorts of students in Latin America and in Spain.

- Academic Publishing
- Campaign Strategy (p. 308)
- Climate Change Management and Policy (p. 308)
- Community Advocacy (p. 308)
- Digital Politics (p. 309)
- Fundamentals of Strategic Security
- Global Public Relations (p. 309)
- Health Care Corporate Compliance (p. 309)
- Justice and Public Safety Information Management (p. 309)
- Landscape Design (p. 310)
- Law Firm Management (p. 310)
- Organization Performance Improvement (p. 310)
- PACs and Political Management (p. 310)
- Paralegal Studies (p. 311)
- Public Relations (p. 311)
- Safety Leadership
- Strategic Cyber Security Enforcement
- Sustainable Landscapes (p. 311)
- Urban Sustainability (p. 311)

FACULTY

Program Directors A. Ashkar, S. Billet, L. Brown, J. Carruthers, A. Grossblatt, N. Houghtby-Haddon, S. Hooshangi, R. Izurieta, F. Lemieux, C. Leonard, T. Marsh, L. Matos, L. Parnell, D. Rehr (*acting*), J. Thorpe

UNDERGRADUATE PROGRAMS

BACHELOR OF PROFESSIONAL STUDIES IN INTEGRATED INFORMATION, SCIENCE, AND TECHNOLOGY

The Bachelor of Professional Studies in the field of integrated information, science, and technology is an innovative and interdisciplinary program designed for community college

graduates and working professionals who are seeking to complete their bachelor's degree.

The program is for an individual who currently holds an Associate's Degree or has earned at least 60 credit hours towards their undergraduate degree. The remaining 60 credit hours required to earn the bachelor's degree consists of 44 credit hours of core courses and 16 credit hours of elective courses. The program can be completed within two academic years (5 consecutive semesters, including a summer session).

REQUIREMENTS

Admission requirements

Applicants to the Bachelor of Professional Studies in integrated information, science and technology must have earned an Associate's degree in science, technology or related field or at least 60 credits of relevant course work from a regionally accredited community college, university or equivalent.

Applicants without an Associate's degree (but with 60 credits from a regionally accredited institution of higher education or equivalent) must have a range of courses that satisfies a general education distribution requirement. This requirement includes a total of 24 credits with at least 6 credits in each of the following general areas:

1. Quantitative and logical reasoning
2. Natural sciences with one lab course
3. Arts and humanities
4. Social and behavioral sciences

Degree requirements: 11 core and 4 elective courses for a total of 60 credits

Core courses:

PSIS 2101	Writing & Comm & Med Rel - I
PSIS 2102	Writing & Comm & Med Rel - II
PSIS 2103	Found Math & Stat Sci - I
PSIS 2104	Found Math & Stat Sci - II
PSIS 2105	Found Info Tech & Comp - I
PSIS 2106	Found Info Tech & Comp - II
PSIS 3122	Ethics in Sci & Tech Policy
PSIS 4138	Introduction to Health IT
PSIS 4142	Rel Databases & Design
PSIS 4152	Entrprnrshp/Tech Venture Cr
PSIS 4191	Capstone Project and Senior Thesis I
PSIS 4192	Caps Proj & Senior Thesis- II

or PSIS 4190 Capstone Proj & Senior Thesis

PSIS 4190 Capstone Proj & Senior Thesis

Four upper-level electives selected from the following:

PSIS 4132 Phys Principles of Biotech

PSIS 4133 Bioinformatics

PSIS 4137 Alternative Energy Sources

PSIS 4141 Comp & Telecom Networks

PSIS 4144 Info & Network Security

PSIS 4145 Software Sys Dev Processes

PSIS 4195 Undergraduate Research

PSIS 4199 Special Topics

FACULTY

Director S.Hooshangi

BACHELOR OF PROFESSIONAL STUDIES IN POLICE AND SECURITY STUDIES

This challenging program delivers the knowledge and skills needed to work more effectively as a police professional. Developed by faculty in consultation with metropolitan area law enforcement and police specialists the core coursework is designed to develop three central areas of competency: (1) intelligence and criminal analysis; (2) forensic science; (3) leadership and management. Elective courses are offered from a variety of disciplines, including sociology, leadership, public health, and international affairs.

REQUIREMENTS

Admission requirements:

To be considered for admission to the College of Professional Studies Police and Security Studies program, the applicant must possess an academic record of achievement and be employed as a security and safety professional. The admission requirements are listed below.

- Completion of a college-level English Composition course at a regionally accredited U.S. college or university with a grade of C or higher. **Note:** Applicants may submit an acceptable writing sample taken in a CPS test setting if a college-level English Composition course has not been completed. Test centers are located in DC, Alexandria, Arlington, and Newport News, VA.

- Attended at least one college-level course (minimum 3 credits) at a regionally accredited institution of higher education.
- Two or more years of work experience in the safety and security field.
- Completion of the first 12 credit hours taken at GW with a grade of C or higher. *All degree candidates receive provisional admission until completion of their first 12 credit hours at GW.*

Requirements for the degree: 120 credits

Requirements for the program:

30 credits of general education coursework including:*

6 credits of English composition or UW 1020 University Writing plus 2 credits of independent research with a focus on the application of the principles learned in UW 1020

6 credits of quantitative and logical reasoning

6 credits of social and behavioral sciences

6 credits of natural sciences, including one laboratory course

6 credits of arts and humanities

60 credits of core courses:

Intelligence and Criminal Analysis

CPS 2103	Particular Forms of Crime (Intelligence and Criminal Analysis)
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CPS 2107	Models of Policing
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CPS 2108	Criminal Intelligence
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CPS 2109	Criminal Analysis (Forensic Science)
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CPS 2110	Predictive Policing
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Forensic Science

CPS 2130	Intro to Forensic Science
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CPS 2131	Crime Scene Investigation
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CPS 2132	Computer Crime Investigation
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CPS 2133	Incident Management
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CPS 2171	The Criminal Mind
----------	-------------------

Leadership and Management

CPS 2102	Resource Management
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CPS 2104	Leading Teams
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CPS 2106	Strategic Planning
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CPS 2134	Ethical Dilemmas in Policing
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CPS 4192	Capstone Simulation
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30 credits of electives selected from the following, in consultation with academic advisor:

CPS 2101	The Criminal Justice System
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CPS 2170	Domestic Violence
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CPS 2172	Comparative Police Systems
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CPS 2173	Transnational Threats&Security
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CPS 2174	Crisis & Emergency Planning
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CPS 2175	Emergency Pub. Health Issues
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CPS 2176	Media,PR&Crisis Communication
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General education and elective courses may be completed at any regionally accredited institution. A grade of C or higher is required for transfer credit to be approved. General education and elective coursework may be completed before, during, or within five years of completing the other requirements for the bachelor's degree.

FACULTY

Director F. Lemieux

Assistant Director J. Delinski

B.A. IN POLITICAL COMMUNICATION AND M.P.S. IN POLITICAL MANAGEMENT

OVERVIEW

The George Washington University's School of Media and Public Affairs (<http://www.gwu.edu/~pschool>) and The Graduate School of Political Management (GSPM) offer a dual Bachelor of Arts with a major in political communication and Master of Professional Studies in the field of political management degree program designed for high-quality undergraduate students who are interested in careers in the field of Political Management (<http://gspm.gwu.edu/node/120>). This dual degree program, by allowing the counting of credits for two courses towards both programs, permits both degrees to be granted in a shorter time and at lower cost than if both programs were pursued separately. This option is only available to George Washington University students.

SMPA and GSPM share a common commitment to nurturing students who are interested in pursuing professional careers in

politics. GSPM graduate-level courses offer a clear and logical extension of many SMPA undergraduate courses.

Application Process

Application to the dual degree program may be made by a SMPA undergraduate student in the third year of study at The George Washington University. Admission to the dual degree program allows the student to substitute two Political Management (<https://gspm.gwu.edu/node/120>) courses for the requirements of the SMPA undergraduate degree. The student will graduate from the Columbian College of Arts and Sciences with a B.A. in Political Communication or a B.A. in Journalism and Mass Communication then continue to pursue a M.P.S. in Political Management (<https://gspm.gwu.edu/node/120>) at The Graduate School of Political Management. SMPA majors can apply three semesters before graduation, typically in the second semester of their junior year, but on the application should select as their entry term the semester following the completion of their undergraduate degree.

- Apply online (<http://gspm.gwu.edu/node/9>) to the M.P.S. in Political Management (<http://gspm.gwu.edu/node/120>) under the College of Professional Studies (<http://gspm.gwu.edu/node/446>)
- Take the GRE during junior year (required if undergraduate GPA is below a 3.0; optional if undergraduate GPA is above a 3.0). Scores must be received by the admissions committee by June 15 prior to the start of senior year.

Click here (<http://www.gspm.gwu.edu/learnmore>) for more information about the dual degree program.

REQUIREMENTS

SMPA Senior Year Curriculum

Students must meet all of the requirements of their respective SMPA program. Nothing in the 5-year program changes SMPA program requirements. During their senior year students take two courses in Political Management that count toward their elective courses for the major.

Students must take the following course from the Political Management curriculum:

PMGT 6401	Fundamentals of Political Management
And choose one of the following courses:	
PMGT 6402	Applied Political Communications
PMGT 6456	Speechcraft
PMGT 6430	Campaign Strategy

BACHELOR OF ARTS IN POLITICAL SCIENCE AND MASTER OF PROFESSIONAL STUDIES IN LEGISLATIVE AFFAIRS

The George Washington University's Department of Political Science (<http://www.gwu.edu/~psc>) and The Graduate School of Political Management (GSPM) offer a dual degree B.A./M.P.S. program designed for high-quality Political Science undergraduate students who are interested in careers in the field of Legislative Affairs (<http://gspm.gwu.edu/node/139>). This dual degree program, by allowing the counting of credits for several courses towards both programs, permit both degrees to be granted in a shorter time and at lower cost than if both programs were pursued separately. This option is only available to George Washington University students.

The Department of Political Science and GSPM share a common commitment to nurturing students who are interested in pursuing professional careers in politics. GSPM graduate-level courses offer a clear and logical extension of many Political Science undergraduate courses.

Application to the dual degree program may be made by a declared Political Science major in the semester that he/she completes 60 credit hours at the George Washington University. The 60 credit hours do not include any transfer credits. A Political Science major may apply later than the end of sophomore year, however, by doing so may limit the ability to fully enjoy the benefits of this program.

Admission to the dual degree program allows the student to substitute three Legislative Affairs (<http://gspm.gwu.edu/node/139>) courses for the requirements of the undergraduate Political Science Major. These courses will count toward three of the four upper level elective courses in Political Science required for the major and may be taken during the second semester of junior year and during senior year. All Political Science majors are required to complete an undergraduate pro-seminar. The student must take the GRE and apply to the M.P.S. program in the last semester of undergraduate coursework. The student will graduate from the Columbian College of Arts and Sciences with a B.A. in Political Science, then continue to pursue a M.P.S. in Legislative Affairs (<http://gspm.gwu.edu/node/139>) at the Graduate School of Political Management.

REQUIREMENTS

Admissions requirements:
All materials, other than those included in the online Graduate School of Public Management application, are to be submitted directly to the undergraduate advisor (swiley@gwu.edu). Application materials to the undergraduate dual degree program can be used in the application for the Master of Professional Studies in Legislative Affairs (<http://gspm.gwu.edu/node/139>). The admission decision at the

undergraduate level is not a guarantee of admission into the master's program, nor does it require the applicant to complete the master's degree at the Graduate School of Political Management upon graduation from the Columbian College of Arts and Sciences.

The following documents are required:

Completion of the application form (<https://gspm.gwu.edu/sites/gspm.gwu.edu/files/downloads/PSC-LEGA%20Dual%20Degree%20Application.pdf>) submitted in the semester before graduating with a Bachelor of Arts in the field of political science. Applications are due:

- Fall - June 15
- Spring - November 15
- Summer - April 15

Personal statement: In an essay of roughly 250-500 words, explain why you are interested in pursuing the 5-year option and why you should be considered for admission. Among the issues to be addressed are:

- What are the kinds of intellectual issues in political science that you find intriguing?
- Why are you interested in graduate studies in the field?
- What special skills and knowledge can you contribute to the graduate program?

Three letters of recommendation (at least two must be from Political Science faculty): Letters of recommendation may be submitted through the online application to the M.P.S. program and used as application materials for both the undergraduate dual degree program and the political management master's program.

Program of study:

Three of the following core courses:

LGAF 6201	Politics and Public Policy
LGAF 6202	Legislative Politics
LGAF 6203	Executive–Legislative Relations
LGAF 6204	Research Methods for Legislative Affairs Specialists

Contact the undergraduate advisor (swiley@gwu.edu) for more information.

**BACHELOR OF ARTS IN
POLITICAL SCIENCE AND MASTER
OF PROFESSIONAL STUDIES IN
POLITICAL MANAGEMENT**

The George Washington University's Department of Political Science (<http://www.gwu.edu/~psc>) and The Graduate School of Political Management (GSPM) offer a dual degree B.A./M.P.S. program designed for high-quality Political Science undergraduate students who are interested in careers in the field of Political Management. This dual degree program, by allowing the counting of credits for several courses towards both programs, permit both degrees to be granted in a shorter time and at lower cost than if both programs were pursued separately. This option is only available to George Washington University students.

The Department of Political Science and GSPM share a common commitment to nurturing students who are interested in pursuing professional careers in politics. GSPM graduate-level courses offer a clear and logical extension of many Political Science undergraduate courses.

Application to the dual degree program may be made by a declared Political Science major in the semester that he/she completes 60 credit hours at the George Washington University. The 60 credit hours do not include any transfer credits. A Political Science major may apply later than the end of sophomore year, however, by doing so may limit the ability to fully enjoy the benefits of this program.

Admission to the dual degree program allows the student to substitute three Political Management (<http://gspm.gwu.edu/node/120>) courses for the requirements of the undergraduate Political Science Major. These courses will count toward three of the four upper level elective courses in Political Science required for the major and may be taken during the second semester of junior year and during senior year. All Political Science majors are required to complete an undergraduate pro-seminar. The student must take the GRE and apply to the M.P.S. program in the last semester of undergraduate coursework. The student will graduate from the Columbian College of Arts and Sciences with a B.A. in Political Science, then continue to pursue a M.P.S. in Political Management (<http://gspm.gwu.edu/node/120>) at the Graduate School of Political Management.

REQUIREMENTS

Admissions requirements:

At least 60 credits of undergraduate coursework at GW

A minimum grade point average of 3.3 earned and completed at GW

The following documents are required:

Completion of the application form (<https://gspm.gwu.edu/sites/gspm.gwu.edu/files/downloads/PSC-LEGA%20Dual%20Degree%20Application.pdf>) submitted in the semester before graduating with a Bachelor of Arts in the field of political science. Applications are due:

- Fall - June 15
- Spring - November 15
- Summer - April 15

Personal statement: In an essay of roughly 250-500 words, explain why you are interested in pursuing the 5-year option and why you should be considered for admission. Among the issues to be addressed are:

- What are the kinds of intellectual issues in political science that you find intriguing?
- Why are you interested in graduate studies in the field?
- What special skills and knowledge can you contribute to the graduate program?

Three letters of recommendation (at least two must be from Political Science faculty): Letters of recommendation may be submitted through the online application to the M.P.S. program and used as application materials for both the undergraduate dual degree program and the political management master's program.

All materials, other than those included in the online Graduate School of Political Management application, are to be submitted directly to the undergraduate advisor (swiley@gwu.edu). Application materials to the undergraduate dual degree program can be used in the application for the M.P.S. in Political Management (<http://gspm.gwu.edu/node/120>). The admission decision at the undergraduate level is not a guarantee of admission into the M.P.S program, nor does it require the applicant complete the M.P.S. at the Graduate School of Political Management upon graduation from the Columbian College of Arts and Sciences.

Contact the undergraduate advisor (swiley@gwu.edu) for more information.

Program of study

Three of the following core courses:

PMGT 6401	Fundamentals of Political Management
PMGT 6402	Applied Political Communications
PMGT 6403	Political Data and Analytics
PMGT 6404	Principled Political Leadership

GRADUATE PROGRAMS

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF LANDSCAPE DESIGN

The Master of Professional Studies in the field of landscape design program is ideally suited for landscape professionals seeking to upgrade skills, individuals who want to become professional landscape designers, amateurs with an interest in the art of garden design, institutional horticultural staff, nursery employees and garden-design writers. Courses are geared to small-scale landscape design applications with emphasis on sound design principles, good site engineering methods and creative use of plant materials.

The 46-credit master of professional studies degree in landscape design combines the landscape design graduate certificate program with the 18-credit graduate certificate in sustainable landscapes. Students acquire an understanding of best practices in landscape conservation and sustainability, adapted to the small scale landscape.

REQUIREMENTS

Admission Requirements

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Applicants should have a strong academic background, normally with a B average or better (3.0 GPA on a 4.0 scale). Additional application requirements can be found on the Graduate Programs Finder (<http://www.gwu.edu/all-graduate-programs>). (<http://www.gwu.edu/all-graduate-programs>)

The 46-credit degree program consists of:

PSLD 6100	Landscape Graphics
PSLD 6201	Introduction to Design
PSLD 6202	Site Analysis
PSLD 6203	Site Engineering
PSLD 6204	Construction Methods and Materials
PSLD 6212	History of Landscape Design
PSLD 6213	Contemporary Themes in the Landscape
PSLD 6221	Landscape Plants for Fall
PSLD 6223	Landscape Plants for Spring
PSLD 6225	Landscape Plants for Summer
PSLD 6231	Site Design Studio

PSLD 6236	Planting Design Studio
PSLD 6240	Comprehensive Project
PSLD 6260	Introduction to Sustainable Design
PSLD 6261	Ecology of the Built Environment
PSLD 6262	Tools for Sustainable Design
PSLD 6264	Native Plants I
PSLD 6265	Native Plants II
PSLD 6266	Ecological Restoration
PSLD 6268	Sustainable Design Methods
PSLD 6269	Sustenance and the Landscape
PSLD 6270	Sustainable Design Charrette
Electives	
PSLD 6229	Herbaceous Plants
CPS 6291	Special Topics

Special Topics courses address new developments in the field, ex. Vectorworks I & II

Scholarship Requirements

A grade-point average of 3.0 is required for award of a master's degree. Students who receive a grade of C in more than 6 credits are subject to suspension. Students who receive a grade of F must confer with the dean before enrollment for further course work is allowed. See CPS regulations (p. 292) for additional information regarding enrollment status and time limits.

FACULTY

Director A. Ashkar

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF LAW FIRM MANAGEMENT

The Master of Professional Studies in law firm management responds to the need for highly skilled and adaptable leadership in law firms and companies providing services to law firms. This unique, flexible program provides law firm professionals with the business and leadership knowledge they need to succeed in the fast-growing law firm industry. The program consists of 30-credits and can be completed in 18 months. The first 12 credits may stand alone as a graduate certificate in law firm management. The program is specially designed for people working full-time, with a combination

of distance learning and short-term residencies at the GW Alexandria Graduate Education Center. The program begins in June each year.

REQUIREMENTS

Admission Requirements

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Applicants should have a strong academic background, normally with a B average or better (3.0 GPA on a 4.0 scale). Additional application requirements can be found on the Graduate Programs Finder (<http://www.gwu.edu/all-graduate-programs>).

Degree requirements: 30 credits including:

PSLM 6201	Theories, Principles, and Practices of Law Firm Management
PSLM 6202	Applying Strategic & Business Planning
PSLM 6203	Practical Applications of Law Firm Management
PSLM 6204	Principles of Leadership
PSLM 6205	Application of Leadership Frameworks
PSLM 6206	Strategic Leadership for Sustainability and Change
PSLM 6207	Process Improvement in Law Firms
PSLM 6208	Legal Technology and Knowledge Management

Scholarship Requirements

A grade-point average of 3.0 is required for award of a master's degree. Students who receive a grade of C in more than 6 credits are subject to suspension. Students who receive a grade of F must confer with the dean before enrollment for further course work is allowed. See CPS regulations (p. 292) for additional information regarding enrollment status and time limits.

FACULTY

Director C. Leonard

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF PARALEGAL STUDIES

REQUIREMENTS

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international

equivalent. Additional application requirements can be found on the Graduate Programs Finder (<http://www.gwu.edu/all-graduate-programs>).

18 core curriculum credits:

PSLX 6210	American Jurisprudence
PSLX 6211	Legal Research and Writing
PSLX 6212	Litigation
PSLX 6223	Contracts
PSLX 6224	Advanced Legal Writing
PSLX 6225	Business Entities

12 legal practice area credits:

PSLX 6214	Administrative Law
PSLX 6215	Government Contracts Law
PSLX 6226	International Law
PSLX 6227	Intellectual Property Law

The two following courses:

CPS 6294	Independent Research
CPS 6298	Practicum

FACULTY

Director T. Marsh

Assistant Director E. Badawi

MPS IN THE FIELD OF PARALEGAL STUDIES WITH A CONCENTRATION IN HEALTHCARE CORPORATE COMPLIANCE

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Additional application requirements can be found on the Graduate Programs Finder (<http://www.gwu.edu/all-graduate-programs>).

Required:

PSLX 6210	American Jurisprudence
PSLX 6211	Legal Research and Writing

PSLX 6212	Litigation
PSLX 6223	Contracts
PSLX 6224	Advanced Legal Writing
PSHC 6201	Introduction to Health Care Corporate Compliance
PSHC 6202	Compliance with Laws and Regulations I
PSHC 6203	Case Studies in Health Care Corporate Compliance
CPS 6294	Independent Research
CPS 6298	Practicum

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF PUBLIC LEADERSHIP

The Master of Professional Studies in public leadership is a 39-credit program which focuses on the development of the key executive leadership skills required to lead organization change initiatives and the managerial leadership skills required to integrate day-to-day operations with strategic priorities.

REQUIREMENTS

Admission Requirements

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Applicants should have a strong academic background, normally with a B average or better (3.0 GPA on a 4.0 scale). Additional application requirements can be found on the Graduate Programs Finder (<http://www.gwu.edu/all-graduate-programs>).

Degree requirements: 39 credits including:

PSPL 6201	MasteringMulti-SectorLeadership
PSPL 6202	Policy Issues & Analysis
PSPL 6203	Leading in a Digital Environ
PSPL 6204	Politics of Orgnl Leadership
PSPL 6205	Intergovernmental Relations
PSPL 6206	PPP and Contract Mgmt
PSPL 6211	RBM Systems
PSPL 6212	Managing Multisector Workforce
PSPL 6213	Perf-Based Financial Mgmt

PSPL 6221	Org Process Improvement Meth
PSPL 6222	Org Process Analysis
PSPL 6223	Org Process Design
PSPL 6224	PI Research Project

Scholarship Requirements

A grade-point average of 3.0 is required for award of a master's degree. Students who receive a grade of C in more than 6 credits are subject to suspension. Students who receive a grade of F must confer with the dean before enrollment for further course work is allowed. See CPS regulations (p. 292) for additional information regarding enrollment status and time limits.

FACULTY

Director N. Houghtby-Haddon

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF PUBLISHING

The Master of Professional Studies in the field of publishing is a 30-credit program designed for current and aspiring professionals, including post-bachelor and post-graduate students with degrees in varied disciplines. The program is offered part-time with a classroom based or online option. Core coursework provides a broad foundation of the entire industry, regardless of method of delivery (book, journal, or online), with five tracks focusing on professional roles: editorial, business, design, marketing, and technology.

REQUIREMENTS

Admission Requirements

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Applicants should have a strong academic background, normally with a B average or better (3.0 grade point average on a 4.0 scale). The program is available on a part-time basis only.

Additional application requirements can be found on the Graduate Programs Finder (<http://www.gwu.edu/all-graduate-programs>).

Degree requirements: 30 credits including:

Core	
PSPB 6201	Book and Journal Publishing
PSPB 6203	Business of Publishing

PSPB 6205	CopyrightLaw/Print&Cyberspace
PSPB 6207	Marketing Strategies
PSPB 6232	Production Management
PSPB 6251	Fundamentals of Electronic Publishing
PSPB 6281	Ethics in Publishing

Editorial track

PSPB 6261	Editorial Content, Rights, and Permissions
PSPB 6262	Editing for Books, Journals, and Electronic Products
PSPB 6263	Research, Indexes, and Bibliographies
PSPB 6265	Managing Editorial Staff

Business track

PSPB 6221	Publishing Management, Organization, and Strategy
PSPB 6222	Accounting and Finance for Publishers
PSPB 6224	Budgeting, Fulfillment, and Distribution

Marketing track

PSPB 6271	Sales Management, Strategy, and Positioning
PSPB 6272	Book Publicity & Promotion
PSPB 6273	Managing the Marketing Portfolio

Technology track

PSPB 6253	Electronic Publishing Practice
PSPB 6255	ElecPublishing:Infrast&Arch
PSPB 6257	Designing/E-publishing Success

Design and production track

PSPB 6213	Book Design
PSPB 6257	
PSPB 6258	User-Centric Design for Print and Electronic Publications

Scholarship Requirements

A grade-point average of 3.0 is required for award of a master's degree. Students who receive a grade of C in more than 6 credits are subject to suspension. Students who receive a grade of F must confer with the dean before enrollment for further

course work is allowed. See CPS regulations (p. 292) for additional information regarding enrollment status and time limits.

FACULTY

Director A. Grossblatt

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF SECURITY AND SAFETY LEADERSHIP

The Master of Professional Studies in the field of security and safety leadership is a 36-credit program designed for professionals in the homeland security field (including military) who want to develop leadership skills and an in-depth understanding of current and emerging homeland security issues.

REQUIREMENTS

Admission requirements

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Applicants should have a strong academic background, normally with a B average or better (3.0 GPA on a 4.0 scale). Additional application requirements can be found on the Graduate Programs Finder (<http://www.gwu.edu/all-graduate-programs>)

Required: 36 credits in the following:

PSSL 6240	Political Violence and Terrorism
PSSL 6241	Globalization of Threats and International Security
PSSL 6242	Security and Civil Liberties
PSSL 6243	Intelligence and Strategic Analysis
PSSL 6244	Information Systems Protection
PSSL 6250	Strategic Planning and Budgeting
PSSL 6251	Inter-Agency Cooperation
PSSL 6252	Emergency Management and Crisis Communication
PSSL 6253	Managing the Politics of Leadership
PSSL 6254	Strategic Change Leadership
PSSL 6260	Methods of Analysis in Security
PSSL 6270	Capstone Project

Scholarship requirements

A grade-point average of 3.0 is required for award of a master's degree. Students who receive a grade of C in more than 6 credits are subject to suspension. Students who receive a grade of F must confer with the dean before enrollment for further course work is allowed. See CPS regulations (p. 292) for additional information regarding enrollment status and time limits.

FACULTY

Director F. Lemieux

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF STRATEGIC CYBER OPERATIONS AND INFORMATION MANAGEMENT

The Master of Professional Studies in the field of strategic cyber operations and information management is a 36-credit program designed to enhance the cyber security leadership skills of current homeland security and criminal justice professionals, preparing the next generation of strategic leaders who work to secure the country's digital infrastructure.

REQUIREMENTS

Admission requirements

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Applicants should have a strong academic background, normally with a B average or better (3.0 GPA on a 4.0 scale).

Additional application requirements can be found on the Graduate Programs Finder (<http://www.gwu.edu/all-graduate-programs>).

Degree requirements, 36 credits (listed in the preferred order of enrollment):

PSSL 6244	Information Systems Protection
PSSL 6255	Info. Mgt. Just. & Pub. Safety
PSSL 6256	Applied Tech in Data Analytics
PSSL 6245	Cyber Security Law and Policy
PSSL 6257	Enterprise Arch. & Standards
PSSL 6258	Info Sharing & Safeguarding
PSSL 6246	Cyber Intelligence and Strategic Analysis

PSSL 6259	Strat. IT Invsmt. & Perf. Mgmt
PSSL 6260	Methods of Analysis in Security
PSSL 6247	Cyber Defense Strategies
PSSL 6248	Introduction to Cyber Conflict
PSSL 6270	Capstone Project

Scholarship requirements

A grade-point average of 3.0 is required for award of a master's degree. Students who receive a grade of C in more than 6 credits are subject to suspension. Students who receive a grade of F must confer with the dean before enrollment for further course work is allowed. See CPS regulations (p. 292) for additional information regarding enrollment status and time limits.

FACULTY

Director F. Lemieux

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF SUSTAINABLE URBAN PLANNING

The Master of Professional Studies in the field of sustainable urban planning is a 48-credit program offering an array of high-level theoretical, philosophical, and historical courses in planning, urban issues, and new technological approaches that aim to prepare new planning professionals for success in the field.

REQUIREMENTS

Admission requirements

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Applicants should have a strong academic background, normally with a B average or better (3.0 GPA on a 4.0 scale). Additional application requirements can be found on the Graduate Programs Finder (<http://www.gwu.edu/all-graduate-programs>)

Degree requirements

The Master of Professional Studies in sustainable urban planning program consists of 48 credits offered in three parts:

1. Certificate in Urban Sustainability - 18 credits
2. Core Planning Courses - 12 credits
3. Certificate in Climate Change Management and Policy or Sustainable Landscapes - each 18 credits

Scholarship Requirements

A grade-point average of 3.0 is required for award of a master's degree. Students who receive a grade of C in more than 6 credits are subject to suspension. Students who receive a grade of F must confer with the dean before enrollment for further course work is allowed. See CPS regulations (p. 292) for additional information regarding enrollment status and time limits

Certificate in Urban Sustainability

PSUS 6201	Princs of Sust Urb Planning
PSUS 6202	Econ of Sust Communities
PSUS 6210	Sust Transportation Systems
PSUS 6211	Sustainable Land Use
PSUS 6212	Sustainable Communities
PSUS 6230	Sustainable Comm Design Studio

Core Planning

PSUS 6203	Res Methods for Planners
PSUS 6204	Land Use Law
PSUS 6213	Advanced Research Methods
PSUS 6233	Capstone Studio

Certificate in Climate Change Management

PSUS 6221	Greenhouse Gas Acctg & Mgmt
PSUS 6222	Buildings and Climate Issues
PSUS 6223	Transportation & Climate Issues
PSUS 6224	Production and Climate Issues
PSUS 6231	Practicum: Climate Change Mgt & Pol
PSUS 6235	Adv Topics in Urban Sust

Certificate in Sustainable Landscapes

PSUS 6260	Intro to Sustainable Design
PSUS 6261	Ecology of the Built Env.
PSUS 6262	Tools for Sustainable Design
PSUS 6264	Native Plants I
PSUS 6265	Native Plants II
PSUS 6268	Sustainable Design Methods

PSUS 6269	Sustenance and the Landscape
PSUS 6266	Ecological Restoration
PSUS 6270	Sustainable Design Charette

FACULTY

Director J. Carruthers

POLITICAL MANAGEMENT

The Graduate School of Political Management, through the College of Professional Studies, offers the Master of Professional Studies in the fields of political management, legislative affairs, strategic public relations, and advocacy in a global environment. Each program has a prerequisite of a bachelor's degree with a B average from an accredited college or university and is subject to the CPS regulations (<http://www.cps.gwu.edu>) that appear under the respective programs. In addition, graduate certificate programs are offered in campaign strategy, digital politics, community advocacy, public relations, PACs and political management, and global public relations. The Master of Professional Studies in political communication and governance and graduate certificates in both political management and strategic governance and strategic communications and campaigns are offered in Spanish to closed cohorts of students in Latin America and in Spain.

GRADUATE

Master's programs

- Master of Professional Studies in the field of political management (<http://bulletin.gwu.edu/professional-studies/political-management/mps>)
- Master of Professional Studies in the field of legislative affairs (<http://bulletin.gwu.edu/professional-studies/political-management/mps-legislative-affairs>)
- Master of Professional Studies in the field of strategic public relations (<http://bulletin.gwu.edu/professional-studies/political-management/mps-strategic-public-relations>)

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF ADVOCACY IN THE GLOBAL ENVIRONMENT

The Master of Professional Studies in the field of advocacy in the global environment offers innovative experiential learning opportunities for professionals involved in all aspects of global politics and advocacy, from lobbying to strategic public relations, campaigns and influence building.

REQUIREMENTS

This innovative program is designed for both working professionals and full-time students with classes meeting conveniently Monday through Thursday evenings in the Washington, DC metro area. The program is also offered online. The required 39 credits can be completed in as little as one year; however, the usual pace is two courses per semester completed in two years. Twelve credits of coursework are dedicated to the global immersion residencies in regions around the globe: North America (Washington, DC), Europe (Brussels), Middle East and Africa (Istanbul), Asia (Hong Kong), and Latin America (Sao Paulo).

Admission requirements:

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Applicants should have a strong academic background, normally with a B average or better (3.0 GPA on a 4.0 scale). Additional application requirements can be found on the Graduate Programs Finder (<http://www.gwu.edu/all-graduate-programs>)

Degree requirements: 13 courses, 39 credits

Requirements for the major:

Core courses	
PSAD 6225	Fundamentals of Global Political Management
PMGT 6403	Political Data and Analytics
PMGT 6402	Applied Political Communications
PMGT 6404	Principled Political Leadership
PSAD 6240	Global Advocacy: Strategies, Tools, and Tactics
or PSAD 6270	International Public Relations and Global Advocacy
PSAD 6250	Cultural Aspects of Global Engagement
PSAD 6260	Comparative Political Management Environments
Four global residencies	
PSAD 6200	Global Perspectives Residencies
Six credits of electives selected in consultation with advisor*	

*Electives may be chosen from course offerings of the Legislative Affairs, Strategic Public Relations, or Political Management programs. Some students may take courses in the Elliott School of International Affairs, Trachtenberg School of

Public Policy and Public Administration, the School of Business, or create an independent study course with the permission of the program director and approval of the director.

Scholarship Requirements

A grade-point average of 3.0 is required for award of a master’s degree. Students who receive a grade of C in more than 6 credits are subject to suspension. Students who receive a grade of F must confer with the dean before enrollment for further course work is allowed. See CPS regulations (p. 292) for additional information regarding enrollment status and time limits .

FACULTY

Professors M. Kennedy

Associate Professors M. Cornfield, S. Billet, L. Parnell, S. Wiley

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF LEGISLATIVE AFFAIRS

The study of applied politics in the legislative arena, offering students the perspective of both political scholars and working professionals in the legislative arena. The curriculum focuses on how Congress operates, how legislative procedures shape outcomes, and how entities like the Executive Branch, lobbyists and constituents influence the work of the legislature.

REQUIREMENTS

The program is designed for both working professionals and full-time students with classes meeting conveniently Monday through Thursday evenings in the Washington, DC metro area. The required 33 credits can be completed in as little as one year; however, the usual pace is two courses per semester completed in two years.

Admission Requirements

Applicants must hold a baccalaureate degree from a regionally accredited institution of higher learning or international equivalent. Applicants should have a strong academic background, normally with a B average or better (3.0 GPA on a 4.0 scale). Additional application requirements can be found on the Graduate Programs Finder <http://www.gwu.edu/all-graduate-programs>

The 33-credit program requires:

LGAF 6201	Politics and Public Policy
LGAF 6202	Legislative Politics
LGAF 6203	Executive–Legislative Relations

LGAF 6204 Research Methods for Legislative Affairs Specialists

At least two courses chosen from each of the following groups:

American political process	
LGAF 6217	Budgetary Politics
LGAF 6218	Judicial Politics
LGAF 6219	American Presidency
LGAF 6222	Parties and Elections
LGAF 6223	Public Opinion/Pol Socializatn
LGAF 6224	Interest Group Politics
LGAF 6228	Media and Congressional Politics
LGAF 6233	Comparative Legislatures
LGAF 6234	PACs and Congress
Public policy analysis	
LGAF 6246	Congress & Foreign Policy
LGAF 6249	Congress and National Security Policy
LGAF 6251	Budgetary Policy
LGAF 6260	Special Topics: Domestic Policy
LGAF 6270	Special Topics: Congress and Foreign Policy

The program may be completed with or without a thesis (LGAF 6998- LGAF 6999).

With prior approval of the academic advisor, students may take up to three courses in related disciplines. All students must pass a Master’s Comprehensive Examination.

FACULTY

Director S. Billet

Associate Professors D. Johnson, M. Cornfield, S. Billet, L. Parnell, S. Wiley

Professorial Lecturers J. Weinberg, R. Whitlock, C. Veillette

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF POLITICAL MANAGEMENT

Political Management (<http://gspm.gwu.edu/node/120>) prepares students to succeed in the booming vocation of politics. You will learn how to win campaigns, advocate

effectively on the issues, and formulate sophisticated communication strategies. Your instructors (<http://gspm.gwu.edu/node/434>) are top practitioners in the political world who are passionate about educating students in their areas of expertise. Upon graduation, you'll be ready to assume decision-making positions as consultants, department heads, chiefs of staff, and even office-holders (<http://gspm.gwu.edu/node/644>) in the public-facing organizations where democracy lives and history gets made.

REQUIREMENTS

The 36-credit program requires:

PMGT 6401	Fundamentals of Political Management (completed as part of the first six courses taken)
PMGT 6402	Applied Political Communications (completed as part of the first six courses taken)
PMGT 6403	Political Data and Analytics (completed as part of the first six courses taken)
PMGT 6404	Principled Political Leadership (completed as part of the first six courses taken)
Six electives from the following:	
PMGT 6410	Grassroots Engagement
PMGT 6412	Issues Management
PMGT 6422	State and Intergovernmental Politics
PMGT 6430	Campaign Strategy
PMGT 6432	Managing Campaigns
PMGT 6434	Running for Office
PMGT 6436	National Campaign Dynamics
PMGT 6438	State and Local Campaigns
PMGT 6440	Targeting and Voter Contact
PMGT 6442	Campaigns Around the World
PMGT 6450	Rules, Laws, and Strategy
PMGT 6452	Digital Strategy
PMGT 6454	Fundraising and Budgeting
PMGT 6456	Speechcraft
PMGT 6458	Crisis Management
PMGT 6460	Audience Research

PMGT 6462	Opposition Research
PMGT 6464	Influencing the Media
PMGT 6466	Political Advertising
PMGT 6468	Digital Advertising and Action
PMGT 6470	Digital Content Creation
PMGT 6472	Maximizing Social Media
PMGT 6474	Stereotypes and Political Strategy
PMGT 6476	Political Consulting
PMGT 6490	Special Topics
PMGT 6496	Independent Study
PMGT 6497	Graduate Internship

Students are also required to either write a thesis or take the capstone course.

Those opting to write a thesis take PMGT 6498-6499 over the course of their final two terms.

Those opting for the capstone course take PMGT 6495 and one additional elective in either their final or penultimate term.

FACULTY

Director M. Kennedy

Professor F.C. Arterton

Associate Professors S. Billet (Program Director), L. Brown (Program Director), M. Cornfield (Research), D. Niven, L. Matos, L. Parnell (Program Director), S. Wiley

Assistant Professors M. Dallek, G. Lebel, D. Rehr (Program Director)

Professorial Lecturers J. Babb, T. Bawidamann, P. Bell, N. Bockso, M. Braden, S. Bush, M. Crannell, B. Carr, D. Cantor, J. Chandler, J. Dube, M. Edwards, L. Ellenbogen, W. Feltus, P. Fenn, K. Gage, S. Gagen, C. Giddins, E. Greffe, J. Halls, S. Herness, J. Hobson, R. Johnson, M. Kline, D. McGroarty, M. Meissner, G. Nordlinger, D. Payne, B. DiResta, R. Schrieffer, C. Shank, E. Tracey, B. Tringali, M. Ward

M.P.S. IN THE FIELD OF POLITICAL COMMUNICATION AND GOVERNANCE (OFFERED ONLY IN SPANISH)

Graduate certificates in political management and strategic governance and in strategic communications campaigns and

the Master of Professional Studies in political communication and governance are offered in Spanish to closed cohorts of students in Latin America and in Spain. Additional information can be found at the program’s website (<http://www.gspminternational.org>).

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF STRATEGIC PUBLIC RELATIONS

The Master of Professional Studies in the field of strategic public relations is a comprehensive 33-credit program that prepares graduates to work at major public relations firms or in communication roles with non-profits, corporations, on Capitol Hill, or in the Executive Branch. The program is offered at our Alexandria Education Center as well as online.

REQUIREMENTS

The 33-credit degree program consists of:

PSPR 6201	Public Relations Principles and Practices
PSPR 6202	Advanced Writing for PR Professionals
PSPR 6203	Research Methods for Public Relations and Public Affairs Managers
PSPR 6204	Media Relations in the New Media World
PSPR 6205	Fundamentals of Business and Management for Public Relations and Public Affairs
PSPR 6206	Ethical Standards in Public Relations and Public Affairs
PSPR 6207	Sustainability Communications Methods and Practices
PSPR 6208	Strategic Marketing and Marketing Communications
PMGT 6403	Political Data and Analytics
LGAF 6223	Public Opinion/Pol Socializatr

Two courses chosen from designated PSPR and PMGT courses, plus either CPS 6298 or CPS 6300.

FACULTY

Director L. Parnell

CERTIFICATE PROGRAMS

GRADUATE CERTIFICATE IN CAMPAIGN STRATEGY

REQUIREMENTS

Required courses (5 courses, 15 credits):

PMGT 6401	Fundamentals of Political Management
PMGT 6402	Applied Political Communications
PMGT 6403	Political Data and Analytics
PMGT 6430	Campaign Strategy
PMGT 6440	Targeting and Voter Contact

Elective course (1 course, 3 credits):

PMGT 6432	Managing Campaigns
PMGT 6434	Running for Office
PMGT 6454	Fundraising and Budgeting

GRADUATE CERTIFICATE IN CLIMATE CHANGE MANAGEMENT AND POLICY

Required:

PSUS 6221	Greenhouse Gas Acctg & Mgmt
PSUS 6222	Buildings and Climate Issues
PSUS 6223	Transportation & Climate Issues
PSUS 6224	Production and Climate Issues
PSUS 6231	Practicum: Climate Change Mgt & Pol
PSUS 6235	Adv Topics in Urban Sust

GRADUATE CERTIFICATE IN COMMUNITY ADVOCACY

REQUIREMENTS

Required courses:

PMGT 6401	Fundamentals of Political Management
PMGT 6402	Applied Political Communications
PMGT 6403	Political Data and Analytics
PMGT 6410	Grassroots Engagement

PMGT 6460	Audience Research
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Elective courses:

PMGT 6422	State and Intergovernmental Politics
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PMGT 6440	Targeting and Voter Contact
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GRADUATE CERTIFICATE IN DIGITAL POLITICS

REQUIREMENTS

Required courses:

PMGT 6402	Applied Political Communications
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PMGT 6403	Political Data and Analytics
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PMGT 6452	Digital Strategy
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Elective courses:

PMGT 6440	Targeting and Voter Contact
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PMGT 6468	Digital Advertising and Action
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PMGT 6470	Digital Content Creation
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PMGT 6472	Maximizing Social Media
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GRADUATE CERTIFICATE IN GLOBAL PUBLIC RELATIONS

REQUIREMENTS

Required courses (5 courses, 15 credit hours):

PMGT 6402	Applied Political Communications
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PMGT 6403	Political Data and Analytics
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PSPR 6204	Media Relations in the New Media World
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PSAD 6270	International Public Relations and Global Advocacy
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PSAD 6200	Global Perspectives Residencies
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Elective course (1 course, 3 credits)

Flexible electives: With the program director's approval, you may take an elective from the strategic public relations, legislative affairs, or political management programs. Some students may elect to take a course at another GW school or college with approval from the program director.

GRADUATE CERTIFICATE IN HEALTH CARE CORPORATE COMPLIANCE

To earn the Healthcare Corporate Compliance Graduate Certificate, students must complete the 12 credit program and maintain a grade point average of 3.0 (B) or higher.

Required:

PSHC 6201	Introduction to Health Care Corporate Compliance
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PSHC 6202	Compliance with Laws and Regulations I
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PSHC 6203	Case Studies in Health Care Corporate Compliance
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GRADUATE CERTIFICATE IN JUSTICE AND PUBLIC SAFETY INFORMATION MANAGEMENT

REQUIREMENTS

Program Format - Graduate Certificate

The 15 credit graduate certificate in justice and public safety information management curriculum has been tailored to address the rising demand for professionals with a comprehensive and strategic knowledge of policy, best practices, and strategies related to IT and data management for use by public and private sector homeland security and justice organizations..

The program combines classroom-based and online instruction delivered via Blackboard, GW's web-based educational platform. The online component allows students to fit a full course load into their busy schedules, making it possible to complete the degree in three semesters.

Required: 15 credits

Semester One

PSSL 6255	Info. Mgt. Just. & Pub. Safety
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PSSL 6256	Applied Tech in Data Analytics
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Semester Two

PSSL 6257	Enterprise Arch. & Standards
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PSSL 6258	Info Sharing & Safeguarding
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Semester Three

PSSL 6259	Strat. IT Invsmt. & Perf. Mgmt
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Program Schedule

- Students can be admitted for Spring or Fall cohort. Students can also begin Summer semester as a nondegree student. See admissions page for more details.
- All classes are three credits.
- Students will attend online classes and one weekend residency per month. Weekend residency classes will meet Saturday and Sunday, from 9:00am-4:00pm, with a break for lunch.
- 24 hours in class, the rest of the coursework will be completed online via Blackboard.

GRADUATE CERTIFICATE IN LANDSCAPE DESIGN

REQUIREMENTS

Requirements:

One introductory course:

PSLD 6100 Landscape Graphics

26 credits with a GPA of 3.0 or above:

PSLD 6201 Introduction to Design

PSLD 6202 Site Analysis

PSLD 6203 Site Engineering

PSLD 6204 Construction Methods and Materials

PSLD 6212 History of Landscape Design

PSLD 6213 Contemporary Themes in the Landscape

PSLD 6221 Landscape Plants for Fall

PSLD 6223 Landscape Plants for Spring

PSLD 6225 Landscape Plants for Summer

PSLD 6231 Site Design Studio

PSLD 6236 Planting Design Studio

PSLD 6240 Comprehensive Project

Permission from the instructor is required for students not admitted to the graduate certificate program to take courses 6201 and above. A maximum of six credits (including the introductory course) can be taken in non-degree status.

GRADUATE CERTIFICATE IN LAW FIRM MANAGEMENT

The Master of Professional Studies in law firm management is a 30-credit program that can be completed in 18 months. The first 12 credits may stand alone as a graduate certificate. As

described below, the program is specially designed for people working full-time, with a combination of distance learning and short-term residencies at the GW Alexandria Graduate Education Center.

Required:

PSLM 6201 Theories, Principles, and Practices of Law Firm Management

PSLM 6202 Applying Strategic & Business Planning

PSLM 6203 Practical Applications of Law Firm Management

PSLM 6204 Principles of Leadership

PSLM 6205 Application of Leadership Frameworks

PSLM 6206 Strategic Leadership for Sustainability and Change

PSLM 6207 Process Improvement in Law Firms

PSLM 6208 Legal Technology and Knowledge Management

GRADUATE CERTIFICATE IN ORGANIZATION PERFORMANCE IMPROVEMENT

The Graduate Certificate Program in Organization Performance Improvement is a 15-credit program comprised of four courses, Green and Black Belt certification exams, two organization performance improvement projects and individual project coaching for content application and practical project management strategies. The courses are:

PSPL 6301 Fundamentals of Organization Performance Improvement

PSPL 6302 Leading Organization Performance Improvement Initiatives

PSPL 6303 Advanced Methods for Organization Performance Improvement

PSPL 6304 Advanced Applications in Organization Performance Improvement

GRADUATE CERTIFICATE IN PACS AND POLITICAL MANAGEMENT REQUIREMENTS

Required course:

LGAF 6234	PACs and Congress
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Four elective courses including:

Two political management courses:

PMGT 6454	Fundraising and Budgeting
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PMGT 6221	Fundraising for Organizations
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PMGT 6412	Issues Management
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PMGT 6410	Grassroots Engagement
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PMGT 6450	Rules, Laws, and Strategy
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Two legislative affairs courses:

LGAF 6202	Legislative Politics
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LGAF 6222	Parties and Elections
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LGAF 6224	Interest Group Politics
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LGAF 6260	Special Topics: Domestic Policy
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GRADUATE CERTIFICATE IN PARALEGAL STUDIES

REQUIREMENTS

Students who successfully complete the graduate certificate curriculum acquire the knowledge, skills and abilities to succeed in any law firm, government agency, corporation, or non-profit. Those who earn the graduate certificate may apply all of the credits toward the master's degree in paralegal studies.

18 core curriculum credits:

PSLX 6210	American Jurisprudence
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PSLX 6211	Legal Research and Writing
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PSLX 6212	Litigation
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PSLX 6223	Contracts
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PSLX 6224	Advanced Legal Writing
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PSLX 6225	Business Entities
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GRADUATE CERTIFICATE IN PUBLIC RELATIONS

REQUIREMENTS

Required courses:

PSPR 6201	Public Relations Principles and Practices
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PSPR 6202	Advanced Writing for PR Professionals
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PSPR 6204	Media Relations in the New Media World
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PSPR 6205	Fundamentals of Business and Management for Public Relations and Public Affairs
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PSPR 6206	Ethical Standards in Public Relations and Public Affairs
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LGAF 6223	Public Opinion/Pol Socializatn
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GRADUATE CERTIFICATE IN SUSTAINABLE LANDSCAPES

Required:

PSUS 6260	Intro to Sustainable Design
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PSUS 6261	Ecology of the Built Env.
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PSUS 6262	Tools for Sustainable Design
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PSUS 6264	Native Plants I
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PSUS 6265	Native Plants II
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PSUS 6268	Sustainable Design Methods
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PSUS 6269	Sustenance and the Landscape
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PSUS 6266	Ecological Restoration
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PSUS 6270	Sustainable Design Charette
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GRADUATE CERTIFICATE IN URBAN SUSTAINABILITY

Required:

PSUS 6201	Princs of Sust Urb Planning
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PSUS 6202	Econ of Sust Communities
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PSUS 6210	Sust Transportation Systems
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PSUS 6211	Sustainable Land Use
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PSUS 6212	Sustainable Communities
PSUS 6230	Sustainable Comm Design Studio
PSUS 6270	Sustainable Design Charette

SCHOOL OF NURSING

Dean J. Johnson

Interim Senior Associate Dean M.J. Schumann

Assistant Dean R. Halbgewachs

Associate Deans K. Acquaviva, J. Greene, B. Tebbenhoff, C. Pintz

Formerly part of the School of Medicine and Health Sciences established in 1825, The George Washington University School of Nursing (SON) was established in May 2010 as GW's tenth school. The School of Nursing develops nursing leaders who are actively engaged in health promotion, patient advocacy, and health care innovation. The SON educates students in the art and science of assisting patients, families, and communities to achieve their highest level of health. The school promotes leadership, quality, knowledge, collaboration, innovation and compassion. By providing students with a high level of nursing expertise and enhancement of professional leadership skills, graduates of GW's SON are prepared to make a difference in the world.

The programs offered in the SON include the Accelerated Bachelor of Science in Nursing (BSN), Masters of Science in Nursing (MSN), the Doctor of Nursing Practice (DNP), and multiple Post-Masters certificates. These programs stress the integration of research and nursing practice with a strong emphasis on solving "real-world" problems that promote strong leadership skills in graduates.

SON programs are offered both online and on-campus at two locations in the heart of the nation's capital. With the White House, the World Bank, and various other national and international governmental and non-governmental organizations only steps away, students at SON's Foggy Bottom campus are immersed in current events involving health care policy and activism. Students at the Virginia Science and Technology Campus in Loudoun, VA., have access to a new, state-of-the-art, 3,000 square foot simulation center. And SON's distance education students have the opportunity to take classes wherever—and whenever—it's convenient.

Mission

The mission of the George Washington University School of Nursing is to:

- Inspire nurses to provide high quality, compassionate health care
- Transform health care through innovative education, research, policy, and practice
- Develop entrepreneurial leaders and educators who pursue quality and advance the profession
- Improve the health and well-being of people and communities locally, nationally, and globally

Vision

The School of Nursing will drive innovation and improvements in health care worldwide through the education of compassionate nurses, esteemed educators and researchers, entrepreneurial leaders, and influential policy experts.

Accreditation

The George Washington University School of Nursing's Baccalaureate, Master's and Doctor of Nursing Practice programs are accredited by the Commission on Collegiate Nursing Education.

REGULATIONS

Admission

To be considered for admission to any GW School of Nursing program, an applicant must complete the NursingCAS application. Applicants will be required to pay an application fee for NursingCAS; the NursingCAS fee will vary based on the number of programs applied for.

Online application to NursingCAS may be made at o (<http://www.nursingcas.org>)nline (<http://www.nursingcas.org>). Official transcripts must be submitted to NursingCAS from each academic institution attended, regardless of whether credit was earned or is desired.

Applicants should refer to the individual program descriptions for information on prerequisites and supporting documents, since these vary by program.

Information is available online (<http://nursing.gwu.edu/how-apply>). It is the responsibility of applicants to ensure that all required application materials are submitted by the designated deadlines. Unofficial copies, facsimiles, or photocopies of transcripts, certificates, or diplomas will not be accepted. All records become the property of the University and will not be returned. In addition, admitted applicants may need to submit information from a criminal background check, drug screen, physical examination, and evidence of required immunizations and health insurance coverage depending on the program.

Conditional Admission

Admission with conditions may be offered at the discretion of the admissions committee and the Associate Dean for the Division. The terms of admission will be outlined in the letter of acceptance from the University.

Advance Tuition Deposit

Upon notification of acceptance, an advance tuition deposit will be required of students. The deposit is credited toward tuition and is not refundable. Failure to pay this deposit may result in the revocation of a student's admission offer.

International Applicants

The following additional requirements pertain to international applicants:

Required Records

Official copies of all required documentation (transcripts, diplomas, and certificates as well as any other records listing subjects studied, grades received, examinations taken, the results of CHS:keeps its official records. If these documents are in a language other than English, they must be accompanied by a certified English translation. In addition, an evaluated copy completed by an acceptable international evaluation service must be submitted regardless of whether or not the official record is in English.

Language Tests

Applicants whose native language is not English or who are not citizens of countries where English is an official language must submit official test scores for either academic IELTS or TOEFL. The following are the minimum scores for admission consideration:

- Academic IELTS: an overall band score of 7.0, with no individual band score below 6.0
- TOEFL: 600 on paper-based; 100 on Internet-based

The IELTS/TOEFL requirement may be waived for applicants who hold a degree from an accredited college or university located in a country in which English is the official language and also the language of instruction at the institution.

Financial Certificate

A Financial Certificate must be completed and submitted with the application for admission of all international students planning to study at the University under the authorization of either a student (F) or exchange visitor (J) visa. Satisfactory completion and submission of the Financial Certificate is required for the issuance of a Form I-20 or IAP-66. Students pursuing distance education programs are not eligible to apply for or obtain a student visa.

Unclassified Students

A student who wishes to take individual courses in the School of Nursing must obtain permission to register as an unclassified student. Application is made to the Office of Admissions, School of Nursing. The dean's office, in conjunction with the appropriate Associate Dean for the Division, will determine if permission to register will be granted to an unclassified student. Permission to take individual courses, if granted, will generally be limited to a total of 6 credit hours.

Credit earned for courses taken as an unclassified student may be transferred to a degree program at the University if the courses are applicable to the program, have been taken for credit, and have been completed with the minimum grade required in the program. Successful completion of course work taken as an unclassified student does not guarantee admission to a degree program.

Readmission

Students who were previously registered in a School of Nursing program at the University but did not register during the immediately preceding semester (summer sessions excluded) must apply for readmission. Students who have attended other academic institutions while not enrolled at this University must have complete official transcripts sent directly to the Office of Admissions, School of Nursing, from each institution attended. Applications for readmission are considered on the basis of regulations currently in effect.

Transfer Credit

Graduate Students

Up to 6 credit hours of course work may be accepted as transfer credit for graduate students provided the course work was completed within the past five years at an accredited college or university, the course work was taken for graduate credit and did not apply toward completion of requirements for another degree, and the student earned a grade of *B* or better in the course. A limited amount of additional transfer credit may be approved upon petition to the Senior Associate Dean of Academic Affairs. The University reserves the right to refuse transfer credit in part or in whole or to allow credit provisionally. Students' completing the GW School of Nursing's accelerated BSN program will have up to 12 credits applied to the MSN program at GW. The completed credits are eligible to be used for the SON graduate program, for a period not to exceed five years.

Undergraduate Students

Advanced standing may be awarded for appropriate course work completed at other accredited institutions provided minimum grade requirements have been met. The minimum acceptable grade is '*C*' for course work to be applied toward an undergraduate degree. Advanced standing may also be awarded for non-traditional classroom or clinical experience as outlined below. The University reserves the right to refuse transfer credit in part or in whole or to allow credit provisionally. The School of Nursing program will award no more than 66 credit hours accepted as advanced standing from a two-year institution. The School of Nursing will review relevant experiences, licensure, and certification as part of the course, Nurs4121: Nursing Advancement Professional Portfolio, to award credit to associate degree prepared nurses applying to the BSN/MSN Nursing Advancement program.

Degree candidates who are currently enrolled at this institution and plan to take courses at other accredited institutions for transfer credit must secure preapproval by the Associate Dean for the Division and the Senior Associate Dean of Academic Affairs.

Credit for College Board College-Level Examination Program (CLEP)

GW grants credit for specific examinations; those examinations that are not accepted include English composition, English composition with essay, and college mathematics. To earn credit, the student must score at the 50th percentile on each

examination. Arrangements for taking the examinations are the responsibility of the applicant and should be made through College Board College-Level Examination Board. Information is available online (<http://www.collegeboard.com/clep>).

Credit is not assigned for any examination that duplicates material studied in college course work previously completed. Assignment of credit is determined by the School of Nursing Office of Admissions.

Criminal Background Check and Urine Drug Screen

Following acceptance into a clinical program, new students must complete a criminal background check and urine drug screen prior to the first day of their first term. These services are supplied by Certified Background. Instructions for completing this are provided upon admission. Clinical sites may additionally require that students complete the clinical agency's screening for criminal background and drugs in order for a student to have a clinical experience in that agency.

Fees and Financial Regulations

The following fees and financial regulations were adopted for the academic year 2014-2015. Costs are expected to increase in subsequent years.

Tuition & Fees

BSN Students	\$1130/ credit hour up to 12 credit hours
	\$130.00 Kaplan Review each term
	\$220.00 Lab Fee (NURS 3111- Health Assessment)
	\$75 new student orientation fee (first term only)
MSN, DNP, and Certificate students Online Education	\$920/credit hour
	\$35.00 Registration Fee (each semester registered)

Associate Degree to BSN Online Education	\$595 credit hour for Bachelor's portion
	\$500 Portfolio Review Fee (NURS 4121 - Nursing Advancement Professional Portfolio)
	\$35.00 Registration Fee (each semester registered)
	*MSN tuition rates for MSN- Nursing Advancement program

Voluntary Library Fees

The Registration Schedule and Invoice includes a voluntary gift for the university libraries. Check the box labeled "Library Gift Decline," and omit the amount from your payment if you do not wish to include the library gift in your reimbursement to the University.

Special Fees and Deposits (Nonrefundable)

Application fee	50*
Deposits	500
Late registration beginning the first week of the semester	80
Registration for continuous enrollment or leave of absence	35
Late application for graduation	35
Late-payment fee (see Payment of Fees, below)	75
Returned check fee, charged a student whose check is improperly drafted, incomplete, or returned by the bank for any reason	35
Transcript fee	5
Replacement of lost or stolen picture identification card	25
Replacement of diploma	50

* Subject to change.

Payment of Fees

Tuition and fees will be assessed each semester on the basis of the program of studies for which the student registers.

A student who registers for classes in any semester or session incurs a financial obligation to the University. Payment of tuition and fees, as detailed on the Schedule and Invoice, is due approximately two weeks prior to the first day of classes. Changes to registration that affect charges to the student's account must be recorded through the Office of the Registrar. In addition to payment of tuition and fees, the University requires that a student confirm his or her registration. Students whose registrations are not confirmed by the third week of the semester may be canceled from all courses. All students whose registrations are not confirmed are notified that their registrations will be canceled and are asked to contact the Student Accounts Office immediately. The University offers options for payment of tuition and fees in addition to payment in full upon receipt of the Schedule and Invoice or at the time of registration.

Monthly Payment Plans

The University's payment plan is open to all students and is available for the fall and spring semesters only. Students must complete and submit an application by August 15 for the academic year or by January 5 for the spring semester to participate in the plan. The monthly payment plan for the academic year begins in June and ends in March, with the first five payments applied to the fall account and the second five applied to spring. For spring semester only, the plan begins in November and ends in March. Under the plan, all payments are due on the first of each month. The student will receive a monthly bill, but no interest or late fees will be charged provided payments are received as scheduled. Students who enroll in the plan after the first month must make up all payments to the month of enrollment. Interest and a late payment fee are assessed all accounts not paid in full by October 5 for fall and March 5 for spring. An outside vendor administers the plan and charges a one-time participation fee in addition to interest and late fees for any payments received late. For more information, see the Colonial Central website (<http://colonialcentral.gwu.edu/billing/payinghttp://>).

Third-Party Payments

The University accepts employer vouchers or purchase orders that are not contingent upon receipt of grades. Under all circumstances, the charges for tuition and fees remain the responsibility of the student. Authorization from a sponsor to be billed for a student's charges must be received in the Student Accounts Office by the end of the third week of the fall or spring semester. A late authorization fee may be incurred for responses received after these times. Bills are mailed to sponsors in October for the fall semester and in February for the spring semester. Should a sponsor fail to remit payment to the University, the University will contact the student for payment. Students whose employers or sponsors reimburse them for tuition and fees after receipt of grades must pay in full upon receipt of the Schedule and Invoice or at the time of registration to avoid interest, late fees, and/or cancellation of registration. Students whose tuition is paid in full or part by employee benefits or teacher tuition remission must pay any

remaining balance by the stated due date to avoid interest, late fees, and/or cancellation of registration.

Past Due Accounts

Accounts that are past due are encumbered by the University. A student whose account is encumbered may not register for future semesters and may not receive diplomas or transcripts. Late payment fees and interest may also be assessed each month that the account has an overdue outstanding balance. Please see the University's Tuition Payment Disclosure Statement (<http://colonialcentral.gwu.edu/billing/disclosures>) for more information on those fees and billing practices. Accounts that are more than 90 days past due are referred to an agency and/or attorney for collection. The student is then responsible for all charges, costs, and fees due to, or incurred by, the University as well as all costs, fees, and charges incurred by the agency and/or attorney, including attorney's fees. Students whose registrations have been revoked or canceled for failure to make timely payments are not permitted to attend class and may not occupy University housing.

Dishonored/Returned Checks

A student whose check is returned unpaid by the bank for any reason will be charged a returned check fee and will be responsible for any associated costs and/or attorney's fees incurred by the University should a civil lawsuit or other collection effort be instituted to collect on such dishonored check. In any case where the University has reason to believe that a student presented a dishonored check in bad faith, the University may, in addition to any collection efforts, refer the matter to the proper authorities for criminal prosecution.

Withdrawals and Refunds

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean. Notification to an instructor is not an acceptable notice. Financial aid recipients must notify the Office of Student Financial Assistance in writing.

In authorized withdrawals and changes in schedule, cancellations of semester tuition charges and fees will be made in accordance with the following pro rata schedule for the fall and spring semesters.

Drop-Refund Schedule for on-campus students (BSN only):	
On or before the end of the first week of classes	90%
On or before the end of the second week of classes	60%
On or before the end of the third week of classes	40%
On or before the end of the fourth week of classes	25%
After the fourth week of classes	None

Drop-Refund schedule for off-campus students (distance education):	
On or before the end of the second week of classes	90%

On or before the end of the fourth week of classes	50%
After the fourth week of classes	None

Refund policies of the University are in conformity with guidelines for refunds as adopted by the American Council on Education. Federal regulations require that financial aid recipients use such refunds to repay financial aid received for that semester's attendance. This policy applies to institutional aid as well.

In no case will tuition be reduced or refunded because of absence from classes. Authorization to withdraw and certification for work done will not be given to a student who does not have a clear financial record.

Financial Aid

The George Washington University's program of financial assistance for undergraduate students is described in *Assistance with Your Assistance: A Financial Aid Source Book*, a pamphlet available from the Office of Student Financial Assistance, The George Washington University, Washington, DC 20052. Undergraduate aid consists of two basic types: awards for academic achievement or talent without reference to financial circumstances (merit scholarships) and scholarships, grants, loans, and employment based on academic achievement and demonstrated financial need. All undergraduate gift aid (institutional scholarships and grants, and federal grants) requires that the recipient be working on the first undergraduate degree and be registered for a full-time course load at GW. Loans not based on financial need are available.

Students in the Bachelor of Science in Nursing accelerated degree program are only eligible to apply for federal direct and private alternative student loans through the Office of Student Financial Assistance. There are no University grants available for this program. However, students may be eligible to apply for School of Nursing scholarships.

Several offices on campus provide information on financial assistance for graduate and certificate students. A general overview of financing options is provided in the brochure *Graduate Funding Opportunities*, published by the Office of Graduate Student Assistantships and Fellowships, The George Washington University, Washington, D.C. 20052. Forms and information on federal loans for graduate students can be obtained from the Office of Student Financial Assistance. Information on the Federal Work-Study Program, cooperative education opportunities, and on- and off-campus employment is available from the GW Career Center.

Gift aid (scholarships, grants, fellowships, assistantships, etc.) is taxable to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies or is dedicated to other costs, such as room and board. Federal grants may be taxable if, together with other gift assistance, they exceed the allowable costs. In the case of a student who is awarded tuition scholarships, grants, or awards from more than one source, the

combined amount cannot exceed tuition charges; institutional aid will be adjusted to this limit.

In general, consideration for financial aid is restricted to students in good academic standing who are at least half-time and meet the minimum grade-point average for particular awards and are not financially encumbered by any other University office. Applications for institutional or federal aid cannot be processed if the relevant tax returns have not been filed in accordance with the IRS Code. Documents submitted as part of aid applications become the property of the University and cannot be returned. Federal regulations require that the University report suspected cases of fraud or misrepresentation to the appropriate federal, state, and local authorities.

Information on financial aid is accurate at the time each Bulletin is prepared for press. Future changes in federal regulations or institutional policies may alter the application requirements or program guidelines.

Health and Safety

Health and Accident Insurance

All students in the clinical programs are required to have health and accident insurance. Students who fail to maintain such insurance may be placed on Leave of Absence without tuition refund. Undergraduate students are automatically enrolled in the university's student health insurance program through Aetna. Students who have their own insurance plans must provide the required information to be waived from the program and have this item removed from their bill. Graduate students must submit verification of health insurance coverage to the Clinical Contracts Coordinator.

Immunization Requirements

It is the law in the District of Columbia that all students under the age of 26 have a record on file with the Student Health Service documenting immunity to measles, mumps, and rubella (two immunizations with the initial dose given after the first birthday or positive titers), varicella (chickenpox-by immunization, documented history of disease or positive titers), hepatitis B series, meningococcal vaccine (or meningitis waiver), and a current tetanus/diphtheria booster (within 10 years prior to the beginning of the semester).

In addition, the School of Nursing requires all clinical students to submit verification of health and immunization status prior to commencing any clinical coursework. All Undergraduate and Graduate students in clinical programs must submit the required documentation to Certified Background. Students are responsible for providing proof of immunity to: hepatitis B, measles, mumps, rubella, and varicella. Students must show documentation of Tdap (Tetanus, diphtheria, acellular pertussis) within the past 7 years. Skin testing for tuberculosis exposure (PPD) is required on an annual basis. Annual influenza immunization is required. The Student Health Service is available to provide any needed inoculations on a fee-for-service basis.

Undergraduate students who have not provided proof of necessary immunization by the end of the second week of classes may be removed from classes until such proof is given and will not be able to register for the next semester until such proof is given. Graduate students are not permitted to enroll in clinical courses without completion of immunization requirements.

Verification of Health Status

The School of Nursing requires completion of a full physical examination within the twelve months prior to the beginning of clinical courses for all students.

Compliance with HIPAA and OSHA Guidelines

The clinical sites in which students have their clinical experiences must comply with federal guidelines regarding education of employees concerning prevention of the spread of blood borne pathogens and patient privacy. Therefore, they require that all students show evidence of this annual training. Undergraduate students have this as part of their classroom experience. Graduate students in clinical programs must either show evidence of training at their site of employment or complete the School of Nursing's review and quiz online prior to beginning their clinical experiences.

Procedures on the Evaluation of Professional Comportment

1. Preamble:

Students enrolled in the undergraduate and graduate degree and certificate nursing programs ("Nursing School students") are required to conform to all rules, regulations, and policies with University-wide applicability, including those contained in the Guide to Student Rights and Responsibilities (hereinafter "the Guide"). In this regard, the Guide's *Code of Academic Integrity*, *Policy on Equal Opportunity*, *Policy on Sexual Harassment*, *Student Grievance Procedures*, *Privacy of Student Records*, and Articles I-IV, VI, and VII of the Guide's *Statement of Student Rights and Responsibilities* apply to Nursing School students. However, because of the unique curriculum and degree requirements of the School of Nursing, the following Procedures govern Nursing School students (hereinafter "Procedures").

These Procedures *supplement* certain of the applicable policies established by the Guide. For instance, the process set forth in Section Q(2) of Article VI of this Bulletin is designed to provide protection against improper academic evaluation as guaranteed by Article II, Section B of the Guide (Protection Against Improper Academic Evaluation). However, these Procedures, including the rights and procedures contained in them, *replace* the Guide in all instances involving alleged misconduct by Nursing School students, with the exception of matters involving alleged academic dishonesty which are processed under the Guide's *Code of Academic Integrity*. All cases involving alleged misconduct (with the exception of those involving alleged academic dishonesty) will

be processed solely under these Procedures. Further, Nursing School students accused of misconduct will be afforded only those procedures and rights specifically set out in the Procedures below, unless the School of Nursing dean or his/her designee (hereinafter "dean") decides in a particular case to have the case processed under the Guide's Code of Student Conduct. To the extent these Procedures are silent as to a particular right or procedure; such right or procedure is not intended to be afforded under these Procedures. In the case of any inconsistency or ambiguity between these Procedures and University-wide rules, regulations, and policies, including the Guide, these Procedures shall govern.

2. Evaluation of Professional Comportment:

As members of the health care community, Nursing School students are expected to behave in a manner consistent with the principles and obligations inherent in professional practice. Professional maturity, integrity, and competence are expected of students in every aspect of the clinical setting with faculty, preceptors, coworkers, and patients. Students are obliged to practice diligence, loyalty, and discretion in the patient- provider relationship. Some behaviors or patterns, either during the didactic or clinical phase, may raise concerns as to the student's suitability to continue in the program of study. Inappropriate behaviors for a nursing student may include, but are not limited to, breaching patient confidentiality, using illegal drugs or abusing controlled substances, becoming sexually involved with a patient, undertaking a procedure or scope of practice beyond that of a student, disobeying or showing disrespect for others, threatening verbal or physical behavior toward others, including students, faculty or patients, showing a judgmental attitude toward patients, or revealing a lack of concern or compassion in practice.

The process described below is intended to address behaviors that are unacceptable to the School of Nursing and raise questions about the student's fitness for the practice of nursing.

- a. When a problem with professional comportment (other than academic dishonesty) regarding a student is perceived, the observer will communicate this concern to the Senior Associate Dean of Academic Affairs. If the communication is verbal, it must be confirmed immediately by a signed written statement or else it will not be pursued further.
- b. Upon receiving such a communication, the Senior Associate Dean of Academic Affairs will create a confidential file in which all documents pertaining to the matter will be placed. The contents of the file will be preserved for a period of time not less than five (5) years from the date of separation or graduation from the School of Nursing. Access to this file will be restricted to the student under consideration; the Senior Associate Dean of Academic Affairs, the Dean of the School of Nursing and his/her staff; the School

- of Nursing Ad Hoc Committee, if one is constituted; and attorneys for the University and student.
- c. The Dean will notify the student in writing that s/he has received a communication from someone who perceives that the student has a problem with professional comportment. The notice will include a copy of these Procedures.
 - d. The Senior Associate Dean of Academic Affairs will meet informally with the student as soon as possible. At that meeting, or as soon thereafter as possible, the Senior Associate Dean of Academic Affairs may do one or more of the following:
 - i Advise the student.
 - ii Recommend that the student seek professional assistance, at the student's expense.
 - iii Develop additional information through contacts with the student, his/her peers, faculty, professional consultants, and/or any other source deemed to have relevant information. With the student's concurrence, s/he may be referred for a medical, psychiatric, and/or psychological evaluation. The cost of such an evaluation will be paid by the University, and the student will be asked to authorize the professional consultant to make a written report to the Senior Associate Dean of Academic Affairs for inclusion in the student's confidential file. This authorization of the release of information regarding a psychiatric or psychological evaluation shall be made only after the student has had a chance to review the written report.
 - iv Refer the case to a School of Nursing Ad Hoc Committee ("Ad Hoc Committee").
 - v Suspend the student pending investigation and recommendation of the Ad Hoc Committee.
 - e. The involvement of, and actions taken by, the Senior Associate Dean of Academic Affairs may be continuing in nature *Paragraphs 6 through 19 apply if the student is referred to an Ad Hoc Committee.*
 - f. An Ad Hoc Committee and its Chair will be named by the Senior Associate Dean of Academic Affairs. The Ad Hoc Committee, including the Chair, will consist of three faculty members from the School of Nursing.
 - g. The Senior Associate Dean of Academic Affairs will notify the student in writing of the composition of the Ad Hoc Committee. The student will be allowed ten (10) calendar days from the mailing of this notice to object to any person's appointment to the Ad Hoc Committee. Such objection must be sent to the Senior Associate Dean of Academic Affairs in writing. The Senior Associate Dean of Academic Affairs will, at his/her sole discretion, determine whether an objection warrants the appointment of one or more different persons to the Ad Hoc Committee, who shall be selected as set forth in subsection (vi) above.
 - h. The Ad Hoc Committee will investigate the allegation. The Ad Hoc Committee will review the student's confidential file and interview him or her. The Ad Hoc Committee also may gather and review other material and interview any other person who the Ad Hoc Committee, at its sole discretion, has reason to believe may have relevant information to contribute.
 - i. The student under review and/or the student's advisor may attend the information-gathering sessions. The information sessions will be recorded or transcribed. The method used is at the discretion of the Ad Hoc Committee. The student and/or his or her advisor may submit written questions to be answered by persons interviewed by the Ad Hoc Committee, but the procedure regarding their questioning is left to the sole discretion of the Ad Hoc Committee, including whether the questions submitted by the student and/or his or her advisor will be modified and/or posed to the persons interviewed. The student also may suggest persons to be interviewed by the Ad Hoc Committee, but the decision to interview such persons is left to the sole discretion of the Ad Hoc Committee. The student may speak on his/her behalf and may submit other material. The student's adviser may not speak. The materials and/or testimony to be considered and the weight to be given to them are left to the sole discretion of the Ad Hoc Committee. The information sessions should not become excessively legalistic and are not conducted as criminal or civil trials. The legal rules of evidence, including, but not limited to, those rules regarding relevancy, hearsay, and admissibility are not applicable and the criminal and/or civil standards of due process are not controlling. The student and the student's advisor cannot be present when the Ad Hoc Committee meets in executive session.
 - j. Meetings of the Ad Hoc Committee are confidential. Minutes of the Ad Hoc Committee will be placed in the student's confidential file upon the completion of the Ad Hoc Committee's review.
 - k. The Chair and all members will be required to be present for all meetings of the Subcommittee. Meetings may be conducted by conference call when it is not possible for all members to be physically present.
 - l. The Ad Hoc Committee will make its final recommendation(s) to the Senior Associate Dean of Academic Affairs. Such recommendation(s) will be in writing and shall include findings of fact and the reasons for the recommendation(s). There is no required format for the recommendation(s). The content of the recommendation(s), including the nature and specificity of the findings and reasons, is left to the sole discretion of the Ad Hoc Committee. The Chair may review and sign the final recommendation(s) on behalf of the Ad

Hoc Committee. The recommendation(s) could include, but is (are) not limited to, one or more of the following:

- i Advising the student.
 - ii Recommending that the student seek professional assistance, at the student's expense.
 - iii Recommending conditions with which the student must comply in order to continue in the School of Nursing.
 - iv Recommending temporary suspension from the School of Nursing
 - v Recommending dismissal from the School of Nursing.
The Ad Hoc Committee must agree that its recommendation is supported by a preponderance of the evidence (more likely than not). The Ad Hoc Committee shall make an additional recommendation regarding whether or not the confidential file will be made a part of the student's permanent academic file.
- m. The Ad Hoc Committee will forward its recommendation(s) to the Dean of the School of Nursing and shall send a copy to the student.
- n. The Dean of the School of Nursing will review the student's confidential file and the recommendation(s) of the Ad Hoc Committee. The Dean of the School of Nursing, at his/her sole discretion, may meet with the student prior to making his/her determination.
- o. The Dean of the School of Nursing will take whatever action s/he deems appropriate, including dismissal of the student from the School of Nursing. The Dean of the School of Nursing will inform the student in writing of his/her decision.
- p. The student shall have 15 calendar days in which to appeal the decision of the Dean of the School of Nursing. Such appeal shall be in writing sent to the Provost and Executive Vice President for Academic Affairs. The scope of this appeal is limited to the Provost and Executive Vice President for Academic Affairs or his/her designee's determination as to whether the procedures set forth in these Procedures have been complied with. Failure to appeal the decision shall be deemed a waiver of any and all rights to challenge the dean's decision and shall be deemed an acceptance of the same.
- q. The Provost and Executive Vice President for Academic Affairs or his/her designee will make his/her decision on the written record of the proceedings. His/her decision shall be final.
- r. At any time during the process, if the student in question selects an attorney as his or her advisor, the University will have its attorney present. The student, therefore, is required to inform the Office of the Dean

two (2) days in advance of the hearing if counsel is to be present.

Academic Regulations

Many School of Nursing programs are taught in whole or in part via online education. Students enrolled in such programs must have specified hardware and software and meet the technical requirements outlined on the Distance Learning Programs website (<http://www.gwu.edu/technology-requirements>).

The School of Nursing publishes student handbooks each academic year that contains updated information on policies, regulations, and other matters of concern to matriculated students. It is the responsibility of the student to be aware of the information contained in this Bulletin and the applicable program-specific student handbook.

Scholarship Requirements

All undergraduates must maintain a minimum GPA of 3.0 in courses required in the major during their program and in order to graduate. All graduate students must maintain a minimum cumulative GPA of 3.0 during the program and in order to graduate. All didactic courses must be completed with a grade of 'C' or better. A minimum grade of 'B' is required for all undergraduate and graduate level clinical courses. Although transfer credit may be assigned, courses taken at other institutions are not considered in computing the GPA. Programs may, in some instances, establish higher GPA requirements.

Evaluation of Academic Performance

Faculty are responsible for evaluating the performance of students in a meaningful, useful, and timely manner and for assigning grades on a basis that is rational, just, and unbiased. The authority for assignment of grades rests with faculty in the respective programs. Official grades for course work can be obtained from the Office of the Registrar each semester and are not given out by instructors.

GRADES IN UNDERGRADUATE DEGREE OR CERTIFICATE AND POST-BACCALAUREATE CERTIFICATE PROGRAMS

In the School of Nursing, grades that may be assigned are A, A-, B+, B, B-, C+, C, C-, D+, D, D- and F. Except for courses that specifically state that repetition for credit is permitted, a candidate for an undergraduate degree in the School may not repeat a course in which a grade of C or better was received, or a clinical course in which a grade of B or better was received, unless a petition to do so is approved by the Senior Associate Dean of Academic Affairs upon recommendation of the Associate Dean for the Division. If a course is repeated, the first grade remains on the student's record and is included in the cumulative GPA. Please see *Progression* statement for further policy on course repetition. Symbols that may appear include CR, Credit; AU, Audit; P, Pass; NP, No Pass; I, Incomplete; IPG, In Progress; W, Authorized Withdrawal; Z, Unauthorized Withdrawal. These symbols are not considered in determining the GPA.

GRADES IN GRADUATE DEGREE AND CERTIFICATE PROGRAMS

In the School of Nursing, grades that may be assigned are A, A-, B+, B, B-, C+, C, C-, and F. Except for courses that specifically state that repetition is permitted, a candidate for a graduate degree or certificate in the School may not repeat a course in which a grade of C or better was received, or a clinical course in which a grade of B or better was received, unless a petition to do so is approved by the Senior Associate Dean of Academic Affairs upon recommendation of the Associate Dean for the Division. If a course is repeated, the first grade remains on the student's record and is included in the cumulative GPA. Please see *Progression* statement for further policy on course repetition. Symbols that may appear include CR, Credit; AU, Audit; P, Pass; NP, No Pass; I, Incomplete; IPG, In Progress; W, Authorized Withdrawal; Z, Unauthorized Withdrawal. These symbols are not considered in determining the GPA.

INCOMPLETE/IN PROGRESS

Grades of 'incomplete' may be used at the discretion of the faculty member. The symbol of I indicates that the instructor has received a satisfactory explanation for the student's inability to complete the required work of the course. The grade may be used only if the student's prior performance in the course has been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded F. Incomplete work must be made up by a date agreed on by the instructor and the student but no later than the last day of the examination period for the semester immediately following the semester or summer session in which the grade of I is assigned. An extension of one additional semester can be requested by the student and may be approved by the Associate Dean for the Division. When work for the course is completed, the grade earned will be indicated in the form of I followed by the grade. The indication of I cannot be removed from the transcript. An Incomplete that is not changed within the allotted time automatically becomes an F.

The symbol of IPG is reserved for courses (such as special projects or clinical courses) in which the course requirements may extend beyond the official University deadline for submitting grades. IPG must be completed during semester following the course in which IPG was assigned. Once the course has been completed, the IPG will be removed from the transcript and the earned grade recorded.

UNAUTHORIZED WITHDRAWAL

The symbol of Z is assigned when students are registered for a course that they have not attended or have attended only briefly, and in which they have done no graded work. At the end of the academic year, students' records are reviewed; if there is more than one Z per semester, a student's record will be encumbered until released by the Associate Dean for the Division or the Senior Associate Dean for Academic Affairs. The symbol of Z is not a grade but an administrative notation.

THE GRADE-POINT AVERAGE

Scholarship is computed in terms of the grade-point average, based only on the student's record in this University. The grade-point average is computed from grades as follows: A, 4.0; A-, 3.7; B+, 3.3; B, 3.0; B-, 2.7; C+, 2.3; C, 2.0; C-, 1.7; D+, 1.3; D, 1.0; D-, 0.7; F, 0, for each credit hour for which the student has registered in a degree program. (Grades below C will be computed in the grade-point average but will not be considered as fulfilling degree requirements.) Courses in which an I or IPG has been assigned will be included when a final grade has been recorded.

DEAN'S LIST

The name of any full-time undergraduate student who achieves a GPA of 3.5 or higher in any one semester with no grades below B- will be placed on the Dean's List for that semester.

APPEAL PROCEDURES FOR CASES OF ALLEGED IMPROPER ACADEMIC EVALUATION

Students who believe that a grade or evaluation is unjust or inaccurate may submit a petition through the program that offers the course. If a mutually satisfactory resolution is not achieved, the student may use the following appeal procedures:

1. The student must submit a written appeal to the Senior Associate Dean of Academic Affairs within five (5) days of posting the grade.
2. The Senior Associate Dean of Academic Affairs will meet with the student to attempt to resolve the issue.
3. If the issue cannot be resolved, the Senior Associate Dean of Academic Affairs will form a three-person special committee ("Grade Appeal Committee"). The Grade Appeal Committee will consist of three (3) members of the School of Nursing faculty.
4. The Grade Appeal Committee will conduct a hearing at which the student and the faculty member have an opportunity to state, in each other's presence, their views on the academic evaluation at issue.
5. The Grade Appeal Committee will make a recommendation to the Dean of the School of Nursing regarding how the issue should be resolved. The Dean of the School of Nursing shall make the final decision regarding the grade appeal and will advise the student and the faculty member in writing of his or her decision.

Academic Standing

An enrolled student is considered to be in good academic standing by the School of Nursing provided that he or she is not on probation or suspended.

Warning

An undergraduate student whose GPA falls between a 2.8 and 3.0 will receive a warning letter from the Senior Associate Dean of Academic Affairs, with a copy to the Associate Dean for the Division.

A graduate student whose GPA falls between a 3.0 and 3.2 will receive a warning letter from the Senior Associate Dean of Academic Affairs, with a copy to the Associate Dean for the Division.

Academic Probation

A full-time undergraduate student who has attempted a minimum of 12 credit hours of course work and whose cumulative GPA is below 2.8 will be placed on academic probation. This probation extends over the period in which the student attempts an additional 12 credit hours of course work. While on probation, students will be allowed to register for no more than 13 credit hours per semester, unless approved by the Associate Dean for the Division and the Senior Associate Dean of Academic Affairs.

A part-time undergraduate student who has attempted a minimum of 6 credit hours of course work and whose cumulative GPA is below 2.8 will be placed on academic probation. This probation extends over the period in which the student attempts an additional 6 credit hours of course work.

A full- or part-time graduate degree candidate who's cumulative GPA falls below 3.0 will be placed on academic probation. For full-time students, probation extends for one semester of full-time course work as defined by the program; for part-time students, probation extends during the period in which the student attempts 9 credit hours of course work.

Progression

In undergraduate programs, any grade less than a C in supporting courses, or less than a B in clinical courses, is not satisfactory and students will not be permitted to progress as planned under the original program of study, but will have a new program of study as recommended by the student's advisor and the Associate Dean for the Division of Undergraduate Studies. Failure of second course is grounds for dismissal. BSN students who are absent from their program for a semester or more, regardless of the reason, may be required to be re-examined on clinical competencies before resuming their studies. Accelerated BSN students must complete their program of study in no more than 6 semesters of enrollment (does not include leaves of absence).

In graduate programs, any grade less than a C in supporting courses or less than B in clinical courses is not satisfactory. Students receiving an unsatisfactory grade may attempt a course a second time. An unsatisfactory grade on a second attempt is grounds for dismissal. Any graduate student who earns less than a B in a clinical course will not progress in the clinical portion of the program until that course is successfully repeated. Both grades remain on the student's transcript and are calculated into the final GPA.

Suspension

An undergraduate student whose cumulative GPA remains below 2.8 after a period of probation may be suspended. A student suspended for poor scholarship may not register for any course work at the University, even as an auditor.

A suspended student may apply for readmission after the lapse of the semester following suspension. Evidence must be presented to the Senior Associate Dean of Academic Affairs, through the student's Associate Dean for the Division, demonstrating that the student is now better prepared to pursue academic course work. Any student suspended twice for poor scholarship will not be readmitted.

A graduate student who is suspended for failure to raise the cumulative GPA to 3.0 may apply for readmission after the lapse of one calendar year by submitting evidence that he or she is now better prepared to pursue graduate course work. If the student fails to achieve the minimum GPA of 3.0 at the end of the semester following readmission, the Associate Dean for the Division may recommend that graduate study be terminated and further enrollment prohibited.

Dismissal

Any student who has received one or more insufficient grades during a semester may be recommended for dismissal by the Associate Dean for the Division. This will be reviewed by the Senior Associate Dean of Academic Affairs. The final decision regarding dismissal will be made by the Dean of the School of Nursing.

Programs of Study

Students enrolled in undergraduate, graduate or certificate programs must meet (in person or electronically) with their faculty advisor to review a program of study, listing all course work required for the degree or certificate, including applicable transfer credit. Changes to the program of study can be made through petition to the program.

Transfer within School of Nursing

To apply for a transfer from one program to another, a written request must be submitted to the Office of Student Services, School of Nursing, along with the necessary supporting documentation required by the program. Transfers will be considered individually and will be dependent upon the student's prior performance and the enrollment within the program.

Changes within School of Nursing

A student may not substitute one course for another without approval of the Associate Dean for the Division and the Senior Associate Dean of Academic Affairs. After the deadlines for adding or dropping courses, a student must obtain the permission of the course instructor, the Associate Dean for the Division, and the Senior Associate Dean of Academic Affairs to withdraw from a course or to change status from credit to audit or audit to credit.

Adding and Dropping Courses

During the registration period (before the end of the second week of classes) students may add or drop courses using GWeb. After the second week of classes, students who wish to add or drop a course must complete a Registration Transaction Form and submit the form to the office of their dean; forms are available on line, at deans' offices, and in the Office of the

Registrar. Adding a course after the second week requires a signature of the instructor or other authorized member of the school.

A course dropped during the first four weeks of classes will not appear on the student's transcript. A course dropped after the fourth week but before the end of the eighth week will be assigned a notation of *W* (Authorized Withdrawal). The deadline for dropping a course without academic penalty is the end of the eighth week of classes in the fall and spring semesters. After the end of the eighth week of classes, dropping a course without academic penalty is only possible after the student presents a petition to the dean and receives written permission.

All charges for courses from which the student withdraws are subject to the refund policy listed under Fees and Financial Regulations in this Bulletin. Failure to withdraw by these procedures can result in an extended financial obligation and the recording of a grade of *F* (Failure) or a notation of *Z* (Unauthorized Withdrawal).

Graduation Requirements

Degrees are conferred in January, May, and August. Graduating students are strongly encouraged to participate in the commencement ceremony held each year in May.

To be recommended for graduation by the faculty, students must have met admission requirements; have completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree; have filed an application for graduation prior to the published deadline; and be free from all indebtedness to the University. Registration, either for course work or for continuous enrollment, is required for the semester or summer session at the close of which the degree is to be conferred.

Applications for graduation must be filed by October 1 for fall graduation, February 1 for spring graduation, and July 1 for summer graduation.

Residence Requirements

The minimum number of credit hours that must be satisfactorily completed in residence in the School of Nursing. See information on the School of Nursing website for specific information regarding the accelerated BSN and the BSN/MSN program for associate degree prepared RNs. Students in all other Master of Science in Nursing programs, and Doctor of Nursing Practice programs must take all but 6 of the total required credit hours in residence. Courses applicable to the degree taken while registered in any division of The George Washington University in the semester immediately prior to admission to degree candidacy in the School of Nursing are counted as courses in residence.

Honors

Bachelor's degrees with honors are awarded to students whose academic records give evidence of particular merit. The student's grade-point average determines the level of honors

as follows: *cum laude*, 3.4–3.59; *magna cum laude*, 3.6–3.79; *summa cum laude*, 3.8–4.0. The grade-point average includes all course work completed at GW and is not rounded off. To be eligible for an honors designation, a student must complete at least 60 hours of course work at GW.

The grade-point average is calculated by the Office of the Registrar, and the honors designation is entered on the transcript and the diploma of those students who earn an honors designation. If honors are entered in the commencement program, honors status will be determined on the basis of work completed by the end of the seventh term and entered only for those students who have completed seven-eighths of the credit hours required for the degree. Honors indicated on the diploma are calculated on the basis of all course work completed. The diploma and transcript are the official indication that a degree was conferred and honors awarded.

Honor Society

The School of Nursing has a chartered chapter of Sigma Theta Tau International, the national honor society of nursing. School of Nursing students who meet the qualifications specified by the constitution of Sigma Theta Tau are eligible for membership and may be nominated by a Associate Dean for the Division, faculty, or other Sigma Theta Tau members.

UNDERGRADUATE

Associate degree pathway programs

- Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing (p. 326)
- Associate's Degree in Nursing Pathway to Bachelor of Science in Nursing and Master of Science in Nursing (p. 324)
- Associate's Degree in Nursing Pathway to Master of Science in Nursing (p. 327)

Bachelor's program

- Bachelor of Science in Nursing (p. 327)

GRADUATE

Master's programs

- Master of Science in Nursing in the field of adult-gerontology primary care nurse practitioner (p. 328)
- Master of Science in Nursing in the field of family nurse practitioner (p. 329)
- Master of Science in Nursing in the field of health care quality (p. 330)
- Master of Science in Nursing in the field of nursing leadership and management (p. 332)
- Master of Science in Nursing in the field of nurse-midwifery (p. 331) (collaborative program between George

Doctoral program

- Doctor of Nursing Practice (p. 333)

CERTIFICATE

In addition to degree programs in which a certificate is awarded along with the degree, the School of Nursing offers certificate-only programs in nursing. The School of Nursing offers post-master's certificates in Adult-Gerontology Nurse Practitioner, Family Nurse Practitioner, Family Specialty for Nurse Practitioners, Nursing Education, and Palliative Care Nurse Practitioner. The School of Nursing also offers a Graduate certification Health Care Quality. Further information can be obtained from the Office of Admissions, School of Nursing.

*As used in this section, "certificate program" refers to an established program in which a certificate only is awarded at completion, rather than a degree program in which both a degree and a certificate are awarded at completion.

ASSOCIATE'S DEGREE IN NURSING PATHWAY TO BACHELOR OF SCIENCE IN NURSING/MASTER OF SCIENCE IN NURSING

This program is designed for recent ADN graduates as well as experienced ADN nurses. It incorporates the completion of specified courses which lead to the completion of both the BSN and MSN degrees. Three fields of study are offered:

- Adult-Gerontology Primary Care Nurse Practitioner
- Family Nurse Practitioner
- Nurse-Midwifery*

Students enrolled part-time can go from an ADN to a BSN in four semesters and can earn a MSN in approximately three years. Students with a bachelor's degree in another field that have an ADN with work experience as a licensed registered nurse should apply directly to the MSN program (<http://nursing.gwu.edu/node/13>), as GW School of Nursing offers a bridge pathway.

This program is versatile yet rigorous. Students complete the coursework online via distance education, complete the clinical practicum rotations in their local communities, and receive mentoring from GW faculty. The distance based format allows professional nurses to advance their education with access to GW's resources and expert faculty while continuing to work. In addition, students attend select on-campus experiences to interact with faculty and other students.

* Note: The Nurse-Midwifery field of study is a collaborative program between George Washington University School of Nursing and Shenandoah University.

Important Information for VA Community College Graduates

GW School of Nursing is pleased to provide guaranteed admission to students who have earned associate's degrees from accredited nursing programs at community colleges across Virginia and who meet GW's academic requirements.

The requirements for this guaranteed admissions opportunity are:

- Completed associate's degree from a community college in the Virginia Community College System that is accredited by the National League for Nursing Accrediting Commission;
- Graduated with a 3.0 grade point average in nursing and overall;
- Completed any additional prerequisite coursework;
- Current licensure as a Registered Nurse (RN)
- Proof of employment in a field requiring nursing knowledge or experience.

Students who meet the above requirements and who also have a bachelor's degree in another field should apply directly to the MSN program (<http://nursing.gwu.edu/node/13>), as GW School of Nursing offers a bridge pathway.

ADULT-GERONTOLOGY PRIMARY CARE NURSE PRACTITIONER

Program Requirements

The Associate Degree in Nursing to Bachelors of Science in Nursing/Masters of Science in Nursing (ADN to BSN/MSN) Adult-Gerontology Primary Care Nurse Practitioner Program prepares registered nurses for growth in advanced nursing practice. This three year, part-time distance education program is designed to seamlessly move the ADN nurse into MSN course work. The requirements for the BSN are met after the fourth semester. Students that continue on to the MSN phase of the program will complete 600 clinical hours at a site approved by the School of Nursing. On-campus components of the program include orientation prior to the start of the first term and returning to campus for skill test outs during spring in the second year and third years.

Program of Study

Year One

Semester One: Fall

NURS 6203 Nursing Leadership

NURS 6205 HealthPolicy,Quality,Political

Semester Two: Spring

NURS 6202	Concepts in Population Health
NURS 6270	Resear Meth Hlth Prof
Semester Three: Summer	
NURS 4117	NPCR 6:Epidemiology&CommHealth
NURS 4119	PatientSafety&HlthCareQuality
NURS 4121	Nursing Advancment Portfolio
Year Two	
Semester Four: Fall	
NURS 6220	Advanced Physiology and Pathophysiology
Elective	
Semester Five: Spring	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning
NURS 6234	Advanced Pharm for Nursing
Semester Six: Summer	
NURS 6271	Resear Meth Hlth Prof II
Year Three	
Semester Seven: Fall	
NURS 6224	Adult/Gerontology Primary Care Nurse Practitioner 1, Practice Introduction
Semester Eight: Spring	
NURS 6225	Adult/Gerontology Primary Care Nurse Practitioner 2, Adolescent & Adult
Semester Nine: Summer	
NURS 6229	Adult/Gerontology Primary Care Nurse Practitioner 3, Adult, Older/Frail

For more information see the ADN to BSN/ MSN Adult Gerontology Primary Care Nurse Practitioner Program website (<https://nursing.gwu.edu/adult-gerontology-primary-care-nurse-practitioner-adn-bsnmsn-program>).

FAMILY NURSE PRACTITIONER

Program Requirements

The total ADN-BSN/MSN Family Nurse Practitioner concentration is 69 credits from the Associate Degree, 15 credits in General Education requirements, 15 credits in a Portfolio review; 21 BSN course credits (12 credits of

undergraduate program are graduate courses) with an additional 33 credits to complete the MSN-Family Nurse Practitioner.

FPN students must complete 750 to 800 hours of clinicals at their site area that has been approved by the School of Nursing (SON).

The ADN-BSN/MSN family nurse practitioner concentration can be completed on a part-time schedule on three years. The students will earn a BSN after the first four semesters in this program.

Program of Study

Year One

Semester One: Fall

NURS 6203 Nursing Leadership

NURS 6205 HealthPolicy,Quality,Political

Semester Two: Spring

NURS 6202 Concepts in Population Health

NURS 6270 Resear Meth Hlth Prof

Semester Three: Summer

NURS 4117 NPCR 6:Epidemiology&CommHealth

NURS 4119 PatientSafety&HlthCareQuality

NURS 4121 Nursing Advancment Portfolio

Year Two

Semester Four: Fall

NURS 6220 Advanced Physiology and Pathophysiology

Elective

Semester Five: Spring

NURS 6222 Advanced Health Assessment and Diagnostic Reasoning

NURS 6234 Advanced Pharm for Nursing

Semester Six: Summer

NURS 6271 Resear Meth Hlth Prof II

Year Three

Semester Seven: Fall

NURS 6230 Family Nurse Practitioner 1, Lifespan Primary Care/Diagnosis/Managemen

Semester Eight: Spring

NURS 6231 Family Nurse Practitioner 2, Lifespan
Primary Care/Diagnosis/Management

Semester Nine: Summer

NURS 6232 Family Nurse Practitioner 3, Professional
Issues/Diagnosis/Management

**For more information see the ADN to BSN/
MSN Family Nurse Practitioner website
(<https://nursing.gwu.edu/adn-bsnmsn-family-nurse-practitioner-concentration>).**

NURSE-MIDWIFERY

Program Requirements

The Associate Degree in Nursing (ADN) to Masters of Science in Nursing (MSN) Concentration in Nurse-Midwifery Program admits for the fall semester only. The curriculum below outlines the courses needed to successfully complete the program as a part-time student. Graduates of the ADN-BSN/MSN Concentration in Nurse-Midwifery Program are required to complete 55 semester hours, including 36 credit hours at The George Washington University (GWU), and 19 credit hours of nurse-midwifery study at Shenandoah University (SU).

Program of Study

Year One

Semester One: Fall

NURS 6203 Nursing Leadership

NURS 6205 HealthPolicy,Quality,Political

Semester Two: Spring

NURS 6202 Concepts in Population Health

NURS 6270 Resear Meth Hlth Prof

Semester Three: Summer

NURS 4117 NPCR 6:Epidemiology&CommHealth

NURS 4119 PatientSafety&HlthCareQuality ((course
has an on-campus component))

NURS 4121 Nursing Advancment Portfolio

Year Two

Semester Four: Fall

NURS 6220 Advanced Physiology and
Pathophysiology

Elective

Semester Five: Spring

NURS 6222 Advanced Health Assessment and
Diagnostic Reasoning ((course has an
on-campus component))

NURS 6234 Advanced Pharm for Nursing

Semester Six: Summer

NURS 6271 Resear Meth Hlth Prof II

Year Three

Semester Seven: Fall

NM 610

NM 620 (course has an on-campus component)

Semester Eight: Spring

NM 630

NM 640 (course has an on-campus component)

Semester Nine: Summer

NM 650

NM 660

NM 652

Courses marked as "NM" are taken at Shenandoah University

**For more information see the ADN to BSN/
MSN Nurse-Midwifery Program website
(<https://nursing.gwu.edu/about-adn-bsnmsn-concentration-nurse-midwifery-program>).**

ASSOCIATE'S DEGREE IN NURSING PATHWAY TO BACHELOR OF SCIENCE IN NURSING

The GW School of Nursing offers three distance learning pathways to advanced knowledge and skills beyond the clinical aspects of nursing to give students a foundation in evidence-based practice, patient safety and health care quality, nursing leadership, and policy.

Available to both recent Associate Degree in Nursing (ADN) graduates and experienced ADN nurses, these pathways are designed for you to become a more marketable and exceptional caregiver as a nurse practitioner or nurse midwife, provide you with enhanced career options and job security, while also helping your hospital achieve "magnet" status.

The distance format will allow you to complete coursework online and clinical preceptorships in your local community, with mentoring from GW faculty. In addition, students attend select on-campus experiences to interact with faculty and other students in person.

REQUIREMENTS

This Associate Degree in Nursing to Bachelor of Science in Nursing Pathway (ADN-BSN) option is a part-time four semester curriculum to complete undergraduate courses required to earn a Bachelors of Science in Nursing (BSN) degree. Building on ADN coursework, plus specific requirements for general education courses (<http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/BSNPrerequisiteDescriptions.pdf>), the GW ADN-BSN requires 21 credits of coursework and the completion of a professional portfolio providing additional credits for advanced standing and competency. Some courses also count for graduate credit if the student decide to go on to earn a masters or doctorate in nursing. The ADN-BSN option begins each fall semester and completes the following fall semester. Through this pathway, students complete coursework online via distance education, complete clinical practicum rotations in the local community, and receive mentoring from GW faculty. Visit the ADN-BSN website (<http://nursing.gwu.edu/adn-bsn>)to learn more.

Year One	
Semester One: Fall	
NURS 6205	HealthPolicy,Quality,Political
NURS 6203	Nursing Leadership
Semester Two: Spring	
NURS 6202	Concepts in Population Health
NURS 6270	Resear Meth Hlth Prof
Semester Three: Summer	
NURS 4117	NPCR 6:Epidemiology&CommHealth
NURS 4119	PatientSafety&HlthCareQuality
NURS 4121	Nursing Advancment Portfolio
Year Two	
Semester Four: Fall	
NURS 6233	Genetics for HC Providers
NURS 6260	Coaching I-Foundations

ASSOCIATE'S DEGREE IN NURSING PATHWAY TO MASTER OF SCIENCE IN NURSING

This program is for nurses with an ADN and a bachelor's degree in a non-nursing field, such as a BA or BS. This option allows students to go straight into a master's program via a "bridge mechanism" by taking a Bridge Course the summer before starting the MSN program. Click on the list of programs to find out more information.

- Adult-Gerontology Primary Care Nurse Practitioner (<https://nursing.gwu.edu/node/123>)
- Clinical Research Administration (<https://nursing.gwu.edu/node/124>)
- Family Nurse Practitioner (<https://nursing.gwu.edu/node/125>)
- Health Care Quality (<https://nursing.gwu.edu/node/126>)
- Nurse-Midwifery (with Shenandoah University) (<https://nursing.gwu.edu/node/511>)
- Nursing Leadership and Management (<https://nursing.gwu.edu/node/127>)

BACHELOR OF SCIENCE IN NURSING

Through the school's accelerated Bachelor of Science in Nursing (ABSN) program, students who already have a Bachelor's degree in a non-nursing field can pursue professional nursing. This 15-month, full-time program draws upon students' previous knowledge from the natural and behavioral sciences, the humanities, and nursing theory to critically analyze and synthesize responses to health problems and provide appropriate nursing interventions. Taught to practice in a multicultural world, the students learn to utilize the nursing process to support and promote health in diverse individuals, families, groups, and communities.

Graduates of the ABSN. program are equipped with the knowledge, skills, and practical experience needed to enter the nursing profession with high ethical, legal, and professional values. What's more, upon completion, students will have earned 12 graduate credits that can be applied to any of GW's MSN degrees within five years.

Housed at GW's Virginia Science and Technology Campus, the program offers the unique opportunity to put theory into practice through the school's Skills and Simulation Laboratory (<https://nursing.gwu.edu/skills-and-simulation-laboratory>), a sophisticated and innovative learning environment in which students gain hands-on experience even before entering a clinical facility.

As the curriculum advances, students are placed in clinical rotations in top-rated facilities in the greater DC area, including Northern Virginia. This gives students highly valued exposure to medical and surgical nursing, obstetrics, pediatrics, psychiatric nursing and community health. The combination

of learning in a traditional classroom setting, in a premier simulation lab, through online courses, and in myriad clinical environments makes GW's ABSN program an exceptional choice for aspiring nurses.

REQUIREMENTS

The second degree B.S.N. program is a full-time program that will span four semesters, or 15 months. Students will enter the program in the fall semester. The second degree B.S.N. program is a full-time program that will span four semesters, or 15 months. Students will enter the program in the fall semester (August) or the spring semester (January). Due to the intensity of the program, the School of Nursing highly recommends that students do not hold employment while enrolled in courses.

The program is a blend of on-campus, online, and clinical coursework. Graduates are required to complete 60 semester hours and at least 700 clinical hours, which will be fulfilled by the coursework below.

NURS 3110	Transition: Nursing Profession
NURS 3111	Health Assessment: Foundations
NURS 3112	NPCR 1:Adult Med-Surg
NURS 3113	ClinSkillsLab:Adult Med-Surg 1
NURS 3114	NPCR 2: AdvancedAdult Med-Surg
NURS 3115	ClinSkillsLab:AdvAdultMedSurg2
NURS 3116	NCPR 3: Psych Mental Health
NURS 3117	NCPR: 4 Maternity/Women Hlth
NURS 3118	Pharmacology
NURS 4116	NPCR 5: Children & Families
NURS 4117	NPCR 6:Epidemiology&CommHealth
NURS 4119	PatientSafety&HlthCareQuality
NURS 4120	Capstone:Transitn to Practice
NURS 6203	Nursing Leadership *
NURS 6204	Health Info and Technology *
NURS 6205	HealthPolicy,Quality,Political *
NURS 6270	Resear Meth Hlth Prof *

* Courses with one asterisk are graduate level, web-based distance learning and may be applied to the Master of Science in Nursing programs at The George Washington University.

MASTER OF SCIENCE IN NURSING IN THE FIELD OF ADULT- GERONTOLOGY PRIMARY CARE NURSE PRACTITIONER

Application to the MSN program

Applicants to the Master of Science in Nursing programs must have an earned Bachelor's degree from an accredited institution and a current license as a registered nurse with a GPA of 3.0 or higher. A Bachelor of Science in Nursing is preferred. RNs with a Bachelor's degree in another field may apply and, if accepted, will be required to take a bridge course the summer prior to the start of their studies.

Students may apply for admission if they will receive their Bachelor's degree before the first day of classes at GW. Applicants must complete the required applications before the deadline and notify the Admissions Office of their current student status. Admitted students will be required to submit a final transcript reflecting degree conferral before the first day of classes at GW. Satisfactory completion of NCLEX (National Council Licensure Examination for Registered Nurses) is required in order to continue in the Masters programs. It is recommended that applicants without relevant nursing work experience attend part time while working as a registered nurse.

Applicants must have a minimum GPA of 3.0 in all coursework, though the admission committee reserves the right to interview applicants who have less than a 3.0 GPA for either undergraduate or graduate studies. The GRE is not required for this program.

Degree Requirements

In addition to fulfilling general admission requirements, applicants to Master of Science in Nursing programs must have a BSN from an accredited institution, normally with a minimum GPA of 3.0 or higher, and a current RN license. Applicants that are registered nurses with a bachelor's degree in a related field may be admitted with the condition that they complete a Nursing bridge course prior to the start of their academic program.

Depending upon the program chosen, MSN credit requirements vary from 36 to 48 credit hours. All MSN programs require 9 credits of professional core courses (NURS 6202 Concepts in Population Health, NURS 6203 Nursing Leadership, NURS 6205 HealthPolicy,Quality,Political) and 6 credits of research courses (NURS 6270 Resear Meth Hlth Prof, NURS 6271 Resear Meth Hlth Prof II). Field-specific course requirements follow, with credit indicated in parentheses in the case of courses offered for variable credit.

REQUIREMENTS

Graduates of the AGPCNP program are required to complete 48 semester hours, including 12 credit hours of professional core, 6 credit hours of research, and 30 credit hours of field-specific study.

The ANP program can be completed on a part-time or full-time schedule, depending on the needs and schedule of each student.

- Sample Program of Study (Part-time Program) (<http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/MSNAGPCNPfallPT.pdf>)
- Sample Program of Study (Full-time Program) (<http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/MSNAGPCNPfallFT.pdf>)

Program Requirements

Professional core courses:

NURS 6202	Concepts in Population Health
NURS 6203	Nursing Leadership
NURS 6205	HealthPolicy,Quality,Political

Research courses:

NURS 6270	Resear Meth Hlth Prof
NURS 6271	Resear Meth Hlth Prof II

Field-specific courses:

NURS 6220	Advanced Physiology and Pathophysiology
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning
NURS 6224	Adult/Gerontology Primary Care Nurse Practitioner 1, Practice Introduction
NURS 6225	Adult/Gerontology Primary Care Nurse Practitioner 2, Adolescent & Adult
NURS 6229	Adult/Gerontology Primary Care Nurse Practitioner 3, Adult, Older/Frail
NURS 6233	Genetics for HC Providers
NURS 6234	Advanced Pharm for Nursing

MASTER OF SCIENCE IN NURSING IN THE FIELD OF FAMILY NURSE PRACTITIONER

Application to the MSN program

Applicants to the Master of Science in Nursing programs must have an earned Bachelor's degree from an accredited institution and a current license as a registered nurse with a GPA of 3.0 or higher. A Bachelor of Science in Nursing is preferred. RNs with a Bachelor's degree in another field may apply and, if accepted, will be required to take a bridge course the summer prior to the start of their studies.

Students may apply for admission if they will receive their Bachelor's degree before the first day of classes at GW. Applicants must complete the required applications before the deadline and notify the Admissions Office of their current student status. Admitted students will be required to submit a final transcript reflecting degree conferral before the first day of classes at GW. Satisfactory completion of NCLEX (National Council Licensure Examination for Registered Nurses) is required in order to continue in the Masters programs. It is recommended that applicants without relevant nursing work experience attend part time while working as a registered nurse.

Applicants must have a minimum GPA of 3.0 in all coursework, though the admission committee reserves the right to interview applicants who have less than a 3.0 GPA for either undergraduate or graduate studies. The GRE is not required for this program.

Degree Requirements

In addition to fulfilling general admission requirements, applicants to Master of Science in Nursing programs must have a BSN from an accredited institution, normally with a minimum GPA of 3.0 or higher, and a current RN license. Applicants that are registered nurses with a bachelor's degree in a related field may be admitted with the condition that they complete a Nursing bridge course prior to the start of their academic program.

Depending upon the program chosen, MSN credit requirements vary from 36 to 48 credit hours. All MSN programs require 9 credits of professional core courses (NURS 6202 Concepts in Population Health, NURS 6203 Nursing Leadership, NURS 6205 HealthPolicy,Quality,Political) and 6 credits of research courses (NURS 6270 Resear Meth Hlth Prof, NURS 6271 Resear Meth Hlth Prof II). Field-specific course requirements follow, with credit indicated in parentheses in the case of courses offered for variable credit.

REQUIREMENTS

The Family Nurse Practitioner (FNP) program can be completed on a part-time or full-time schedule, depending on the needs and schedule of each student. Graduates of the FNP program

are required to complete 48 semester hours, including 12 credit hours of professional core, 6 credit hours of research, and 30 credit hours of field-specific study.

- Sample Program of Study (Part-time Program) (<http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/MSNFNPfallPT.pdf>)
- Sample Program of Study (Full-time Program) (<http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/MSNFNPfallFT.pdf>)
- Sample Program of Study (Spring Part-Time Program) (http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/MSNFNP_SPRINGpt.pdf)

Program Requirements

Research core courses

NURS 6270	Resear Meth Hlth Prof
NURS 6271	Resear Meth Hlth Prof II

Professional core courses

NURS 6233	Genetics for HC Providers
NURS 6202	Concepts in Population Health
NURS 6203	Nursing Leadership
NURS 6205	HealthPolicy,Quality,Political

Family nurse practitioner courses

NURS 6220	Advanced Physiology and Pathophysiology
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning
NURS 6230	Family Nurse Practitioner 1, Lifespan Primary Care/Diagnosis/Managemen
NURS 6231	Family Nurse Practitioner 2, Lifespan Primary Care/Diagnosis/Management
NURS 6232	Family Nurse Practitioner 3, Professional Issues/Diagnosis/Management
NURS 6234	Advanced Pharm for Nursing

For more information visit the FNP website (<https://nursing.gwu.edu/family-nurse-practitioner>).

MASTER OF SCIENCE IN NURSING IN THE FIELD OF HEALTH CARE QUALITY

Application to the MSN program

Applicants to the Master of Science in Nursing programs must have an earned Bachelor's degree from an accredited institution and a current license as a registered nurse with a GPA of 3.0 or higher. A Bachelor of Science in Nursing is preferred. RNs with a Bachelor's degree in another field may apply and, if accepted, will be required to take a bridge course the summer prior to the start of their studies.

Students may apply for admission if they will receive their Bachelor's degree before the first day of classes at GW. Applicants must complete the required applications before the deadline and notify the Admissions Office of their current student status. Admitted students will be required to submit a final transcript reflecting degree conferral before the first day of classes at GW. Satisfactory completion of NCLEX (National Council Licensure Examination for Registered Nurses) is required in order to continue in the Masters programs. It is recommended that applicants without relevant nursing work experience attend part time while working as a registered nurse.

Applicants must have a minimum GPA of 3.0 in all coursework, though the admission committee reserves the right to interview applicants who have less than a 3.0 GPA for either undergraduate or graduate studies. The GRE is not required for this program.

Degree Requirements

In addition to fulfilling general admission requirements, applicants to Master of Science in Nursing programs must have a BSN from an accredited institution, normally with a minimum GPA of 3.0 or higher, and a current RN license. Applicants that are registered nurses with a bachelor's degree in a related field may be admitted with the condition that they complete a Nursing bridge course prior to the start of their academic program.

Depending upon the program chosen, MSN credit requirements vary from 36 to 48 credit hours. All MSN programs require 9 credits of professional core courses (NURS 6202 Concepts in Population Health, NURS 6203 Nursing Leadership, NURS 6205 HealthPolicy,Quality,Political) and 6 credits of research courses (NURS 6270 Resear Meth Hlth Prof, NURS 6271 Resear Meth Hlth Prof II). Field-specific course requirements follow, with credit indicated in parentheses in the case of courses offered for variable credit.

REQUIREMENTS

Students enrolled in the M.S.N. in Health Care Quality program are required to complete 36 credits including 6 credits of

research courses, 12 credits of professional core courses, and 18 credits of required courses in quality and safety.

- Sample Program of Study (Fall-entry) (http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/MSN_HCQ_FALL_PT_2014.pdf)
- Sample Program of Study (Spring-entry) (http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/MSN_HCQ_spring2014%20PT.pdf)

Program Requirements

Professional core courses

NURS 6202	Concepts in Population Health
NURS 6203	Nursing Leadership
NURS 6205	HealthPolicy,Quality,Political

Research courses

NURS 6270	Resear Meth Hlth Prof
NURS 6271	Resear Meth Hlth Prof II

Field-Specific courses

HSCI 6241	The Health Care Enterprise
NURS 6210	Building a Quality Culture
NURS 6211	Health Care Quality Landscape
NURS 6212	Quality Improvement Science
NURS 6213	Health Care Quality Analysis
NURS 6214	Patient Safety Systems
NURS 6275	Leadership &Change/Health Care

MASTER OF SCIENCE IN NURSING IN THE FIELD OF NURSE- MIDWIFERY

Application to the MSN program

Applicants to the Master of Science in Nursing programs must have an earned Bachelor's degree from an accredited institution and a current license as a registered nurse with a GPA of 3.0 or higher. A Bachelor of Science in Nursing is preferred. RNs with a Bachelor's degree in another field may apply and, if accepted, will be required to take a bridge course the summer prior to the start of their studies.

Students may apply for admission if they will receive their Bachelor's degree before the first day of classes at GW. Applicants must complete the required applications before the deadline and notify the Admissions Office of their current

student status. Admitted students will be required to submit a final transcript reflecting degree conferral before the first day of classes at GW. Satisfactory completion of NCLEX (National Council Licensure Examination for Registered Nurses) is required in order to continue in the Masters programs. It is recommended that applicants without relevant nursing work experience attend part time while working as a registered nurse.

Applicants must have a minimum GPA of 3.0 in all coursework, though the admission committee reserves the right to interview applicants who have less than a 3.0 GPA for either undergraduate or graduate studies. The GRE is not required for this program.

Degree Requirements

In addition to fulfilling general admission requirements, applicants to Master of Science in Nursing programs must have a BSN from an accredited institution, normally with a minimum GPA of 3.0 or higher, and a current RN license. Applicants that are registered nurses with a bachelor's degree in a related field may be admitted with the condition that they complete a Nursing bridge course prior to the start of their academic program.

Depending upon the program chosen, MSN credit requirements vary from 36 to 48 credit hours. All MSN programs require 9 credits of professional core courses (NURS 6202 Concepts in Population Health, NURS 6203 Nursing Leadership, NURS 6205 HealthPolicy,Quality,Political) and 6 credits of research courses (NURS 6270 Resear Meth Hlth Prof, NURS 6271 Resear Meth Hlth Prof II). Field-specific course requirements follow, with credit indicated in parentheses in the case of courses offered for variable credit.

REQUIREMENTS

Graduates of the MSN Concentration in Nurse-Midwifery Program are required to complete 49 semester hours, including 30 credit hours of professional core at The George Washington University (GWU), and 19 credit hours of nurse-midwifery study at Shenandoah University (SU). The Masters of Science in Nursing (MSN) Concentration in Nurse-Midwifery Program admits for the fall semester only. The curriculum outlines the 49 credits needed to successfully complete the program as a part-time student in three years.

- Sample Program of Study (Part-time Program) (http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/MSN_NM_FALL_PT_Spring_4.14.pdf)
- Sample Program of Study (Fall Part-time Program) (http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/MSN_NMfallpt_2014.pdf)

Program Requirements

Professional core courses

NURS 6202	Concepts in Population Health
NURS 6203	Nursing Leadership
NURS 6205	HealthPolicy,Quality,Political

Research courses

NURS 6270	Resear Meth Hlth Prof
NURS 6271	Resear Meth Hlth Prof II

Field-Specific courses

NURS 6220	Advanced Physiology and Pathophysiology
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning
NURS 6233	Genetics for HC Providers
NURS 6234	Advanced Pharm for Nursing
NURS 6239	Bridge to Nurse Midwifery
NM 610	
NM 620	
NM 630	
NM 640	
NM 650	
NM 660	

Courses marked as “NM” are taken at Shenandoah University

MASTER OF SCIENCE IN NURSING IN THE FIELD OF NURSING LEADERSHIP AND MANAGEMENT

Application to the MSN program

Applicants to the Master of Science in Nursing programs must have an earned Bachelor's degree from an accredited institution and a current license as a registered nurse with a GPA of 3.0 or higher. A Bachelor of Science in Nursing is preferred. RNs with a Bachelor's degree in another field may apply and, if accepted, will be required to take a bridge course the summer prior to the start of their studies.

Students may apply for admission if they will receive their Bachelor's degree before the first day of classes at GW. Applicants must complete the required applications before the deadline and notify the Admissions Office of their current student status. Admitted students will be required to submit a final transcript reflecting degree conferral before the first day of classes at GW. Satisfactory completion of NCLEX (National

Council Licensure Examination for Registered Nurses) is required in order to continue in the Masters programs. It is recommended that applicants without relevant nursing work experience attend part time while working as a registered nurse.

Applicants must have a minimum GPA of 3.0 in all coursework, though the admission committee reserves the right to interview applicants who have less than a 3.0 GPA for either undergraduate or graduate studies. The GRE is not required for this program.

Degree Requirements

In addition to fulfilling general admission requirements, applicants to Master of Science in Nursing programs must have a BSN from an accredited institution, normally with a minimum GPA of 3.0 or higher, and a current RN license. Applicants that are registered nurses with a bachelor's degree in a related field may be admitted with the condition that they complete a Nursing bridge course prior to the start of their academic program.

Depending upon the program chosen, MSN credit requirements vary from 36 to 48 credit hours. All MSN programs require 9 credits of professional core courses (NURS 6202 Concepts in Population Health, NURS 6203 Nursing Leadership, NURS 6205 HealthPolicy,Quality,Political) and 6 credits of research courses (NURS 6270 Resear Meth Hlth Prof, NURS 6271 Resear Meth Hlth Prof II). Field-specific course requirements follow, with credit indicated in parentheses in the case of courses offered for variable credit.

REQUIREMENTS

Graduates of the NLM program are required to complete 36 semester hours, including 12 credit hours of professional core, 6 credit hours of research, and 18 credit hours of field-specific study (this includes a three-credit elective chosen by the student and approved by the program coordinator). The coursework is delivered through distance education as well as one on-campus experiences. Current students should contact their faculty advisors or program coordinators for more details.

The NLM program can be completed on a part-time or full-time schedule, depending on the needs and schedule of each student.

- Sample Program of Study (Fall Full-time Program) (http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/MSN_NLM2014_FALLft_0.pdf)
- Sample Program of Study (Fall Part-time Program) (http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/MSN_NLM2014_FALLpt.pdf)
- Sample Program of Study (Spring Full-time Program) (http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/MSN_NLM2014_SPRINGft.pdf)

- Sample Program of Study (Spring Part-time Program) (http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/MSN_NLM2014_SPRINGpt.pdf)

Program Requirements

Professional core courses

NURS 6202	Concepts in Population Health
NURS 6203	Nursing Leadership
NURS 6205	HealthPolicy,Quality,Political

Research courses

NURS 6270	Resear Meth Hlth Prof
NURS 6271	Resear Meth Hlth Prof II

Field-Specific courses

NURS 6204	Health Info and Technology
NURS 6258	Leadership Capstone Pract I
NURS 6259	Leadership Capstone Pract II
NURS 6262	Coaching III, Leadership
NURS 6274	Health Economics & Finance
NURS 6295	Health Care Quality Process
HSCI 6241	The Health Care Enterprise

DOCTOR OF NURSING PRACTICE

An alternative to research-focused doctoral programs, the D.N.P. advances professional nursing roles in clinical practice and nursing leadership and management. It is designed to develop leaders in health care – locally or on a national level. Graduates will be able to incorporate health policy, knowledge of information technology, evidence based practice, business principles, collaboration, health systems, and health policy into practice. A clinical research project immerses students in a practice environment, and lays the foundation for future scholarship and success in the nursing field. Students can either at the post-Bachelor's or post-Master's level.

Application

Prospective students to the DNP program have two entry options. For students who are BSN-prepared nurses, the admission requirements include a Bachelor of Science in Nursing from an accredited nursing program with a cumulative GPA of 3.3 or higher. RNs with a bachelor's degree in a nursing-related field will be required to take a bridge course. All applicants applying through this option must have an active RN license.

The second entry option is for MSN-prepared nurses who must have a Master of Science in Nursing degree from an accredited nursing program with a cumulative GPA of 3.3 from an advanced practice registered nursing program, (including nurse practitioners, clinical nurse specialists or nurse midwives with national certification) or from a nursing Leadership and Management or Nursing Administration program. Students admitted to the program may be required to provide verification of clinical hours completed in their Master's program if it is not clear on the transcript.

All prospective students will be required to complete an interview (either by telephone or in person) with faculty to discuss career goals and previous experience in nursing (to be arranged by the school admissions committee). Interviews will be conducted at the discretion of the committee and will not be extended to all applicants. The GRE is not required for this program.

The degree of Doctor of Nursing Practice is offered to graduates of accredited BSN and MSN programs. As indicated below, DNP program requirements differ according to the concentration chosen and the prior nursing degree held. The program can be entered at the post BSN and the post MSN levels.

In addition to fulfilling general admission requirements, all applicants must hold a current R.N. license. Minimum grade-point averages, on a 4.0 scale, are 3.33 for BSN graduates and 3.3 for MSN graduates.

REQUIREMENTS

Below are program options for the D.N.P. degree.

POST-BACHELOR'S OPTIONS

- Doctor of Nursing Practice - Family Nurse Practitioner (http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/BSN_DNP_FNP.pdf)
- Doctor of Nursing Practice - Adult-Gerontology Primary Care Nurse Practitioner (http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/BSN_DNP_AGPCNP.pdf)

POST-MASTER'S OPTIONS

- Doctor of Nursing Practice (<https://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/DNP%20NUPR%20FALL%20PT.pdf>)
- Doctor of Nursing Practice - Education Concentration (<https://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/DNP%20NED%20FALL%20PT.pdf>)
- Doctor of Nursing Practice - Executive Leadership (https://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/DNP_EL_FALL_pt1.pdf)
- Doctor of Nursing Practice - Family Specialty for Nurse Practitioners (https://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/DNP_FSNP_FALL_pt2.pdf)

- Doctor of Nursing Practice - Health Care Quality (<https://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/DNP%20HCQ%20FALL%20PT.pdf>)
- Doctor of Nursing Practice - Palliative Care Nurse Practitioner (http://nursing.gwu.edu/sites/nursing.gwu.edu/files/downloads/DNP_PCNP.pdf)

Program Requirements

Students who enter the D.N.P. program at the post-Master's level are required to complete 36 semester hours of doctoral work. Students who enter the program at the post-Bachelor's level must complete the credit requirements for their concentration (adult nurse practitioner, family nurse practitioner, or nursing leadership and management) before beginning doctoral coursework.

Degree Requirements

The concentration courses that follow are required for post BSN entry:

Adult gerontology primary care nurse practitioner

NURS 6202	Concepts in Population Health
NURS 6203	Nursing Leadership
NURS 6205	HealthPolicy,Quality,Political
NURS 6220	Advanced Physiology and Pathophysiology
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning
NURS 6224	Adult/Gerontology Primary Care Nurse Practitioner 1, Practice Introduction
NURS 6225	Adult/Gerontology Primary Care Nurse Practitioner 2, Adolescent & Adult
NURS 6233	Genetics for HC Providers
NURS 6234	Advanced Pharm for Nursing
NURS 6270	Resear Meth Hlth Prof
NURS 6271	Resear Meth Hlth Prof II

Family nurse practitioner

NURS 6202	Concepts in Population Health
NURS 6203	Nursing Leadership
NURS 6205	HealthPolicy,Quality,Political
NURS 6220	Advanced Physiology and Pathophysiology

NURS 6222	Advanced Health Assessment and Diagnostic Reasoning
NURS 6230	Family Nurse Practitioner 1, Lifespan Primary Care/Diagnosis/Management
NURS 6231	Family Nurse Practitioner 2, Lifespan Primary Care/Diagnosis/Management
NURS 6232	Family Nurse Practitioner 3, Professional Issues/Diagnosis/Management
NURS 6233	Genetics for HC Providers
NURS 6234	Advanced Pharm for Nursing
NURS 6270	Resear Meth Hlth Prof
NURS 6271	Resear Meth Hlth Prof II

Following completion of concentration courses, AGNP and FNP students take:

NURS 6241	The Health Care Enterprise
NURS 8401	Org Concepts in Nursing
NURS 8402	Knowledge Managemnt in Nursing
NURS 8403	Translating Research into Prac
NURS 8404	Research & Policy for Nursing
NURS 8405	Healthcare Quality Improvement
NURS 8498	Research Project Proposal

6 credits of the following:

NURS 8499	Clinical Research Project
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6 credits of approved elective courses

Post MSN entry students enrolled in the nursing practice major take:

NURS 6202	Concepts in Population Health
NURS 6241	The Health Care Enterprise
NURS 8401	Org Concepts in Nursing
NURS 8402	Knowledge Managemnt in Nursing
NURS 8403	Translating Research into Prac
NURS 8404	Research & Policy for Nursing
NURS 8405	Healthcare Quality Improvement
NURS 8498	Research Project Proposal

6 credits of the following:

NURS 8499	Clinical Research Project
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6 credits of approved elective courses unless concentration specifies different program of study

Post MSN entry students enrolled in the executive leadership major take:

NURS 6202	Concepts in Population Health
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NURS 6241	The Health Care Enterprise
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NURS 8401	Org Concepts in Nursing
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NURS 8402	Knowledge Managemnt in Nursing
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NURS 8403	Translating Research into Prac
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NURS 8404	Research & Policy for Nursing
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NURS 8405	Healthcare Quality Improvement
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NURS 8498	Research Project Proposal
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NURS 8499	Clinical Research Project
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NURS 8410	Executive Presence I
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NURS 8411	Executive Presence II
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NURS 8412	HC Finance for Nurse Leaders
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MBAD 6262	Managing Human Capital
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MBAD 6265	Entrepreneurship
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MBAD 6290	Special Topics (Social Entrepreneurship)
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MBAD 6234	Financial Management
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A 1.5 credit approved MBAD approved

Post MSN entry students enrolled in the nursing education concentration take:

NURS 6202	Concepts in Population Health
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NURS 6241	The Health Care Enterprise
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NURS 8401	Org Concepts in Nursing
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NURS 8402	Knowledge Managemnt in Nursing
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NURS 8403	Translating Research into Prac
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NURS 8404	Research & Policy for Nursing
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NURS 8405	Healthcare Quality Improvement
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NURS 8498	Research Project Proposal
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NURS 8499	Clinical Research Project
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HOL 6701	Adult Learning
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HOL 6721	Assessing the Impact of HRD Efforts
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HOL 6742	Design of Adult Learning Interventions
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Post MSN entry students enrolled in palliative care nurse practitioner major take:

NURS 6202	Concepts in Population Health
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NURS 6241	The Health Care Enterprise
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NURS 8401	Org Concepts in Nursing
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NURS 8402	Knowledge Managemnt in Nursing
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NURS 8403	Translating Research into Prac
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NURS 8404	Research & Policy for Nursing
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NURS 8405	Healthcare Quality Improvement
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NURS 8498	Research Project Proposal
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NURS 8499	Clinical Research Project
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NURS 6276	Foundations of Palliative Care
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NURS 6277	Pain and Suffering
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NURS 6278	PalliativeCare:Chronic Illness
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NURS 6279	Palliative Care Practicum I
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NURS 6280	Palliative Care Practicum II
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Post MSN entry students enrolled in the health care quality major take:

NURS 6202	Concepts in Population Health
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NURS 6241	The Health Care Enterprise
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NURS 8401	Org Concepts in Nursing
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NURS 8402	Knowledge Managemnt in Nursing
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NURS 8403	Translating Research into Prac
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NURS 8404	Research & Policy for Nursing
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NURS 8405	Healthcare Quality Improvement
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NURS 8498	Research Project Proposal
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NURS 8499	Clinical Research Project
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NURS 6212	Quality Improvement Science
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NURS 6213	Health Care Quality Analysis
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NURS 6214	Patient Safety Systems
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Post MSN entry students enrolled in dual family specialty for nurse practitioner certificate program take:

NURS 6202	Concepts in Population Health
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NURS 6241	The Health Care Enterprise
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NURS 8401	Org Concepts in Nursing
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NURS 8402	Knowledge Managemnt in Nursing
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NURS 8403	Translating Research into Prac
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NURS 8404	Research & Policy for Nursing
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NURS 8405	Healthcare Quality Improvement
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NURS 8498	Research Project Proposal
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NURS 8499	Clinical Research Project
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NURS 6226	Primary Care of the Family
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NURS 6227	FNP Clinical Practicum
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NURS 6228	Advanced Family Primary Care
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COURSES

COURSES

ACADEMY FOR CLASSICAL ACTING (ACA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ACA 6201. Acting I. 3 Credits.

The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobean, and master classes.

ACA 6202. Acting II. 2,3 Credits.

The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobean, and master classes.

ACA 6203. Acting: Classical Comedy. 2,3 Credits.

The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobean, and master classes.

ACA 6204. Acting: Master Class. 2,3 Credits.

The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobean, and master classes.

ACA 6205. Topics in Classical Drama and Culture. 2 Credits.

Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the 18th century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6206. Topics in Classical Drama and Culture. 2 Credits.

Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the 18th century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6207. Topics in Classical Drama and Culture. 2 Credits.

Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the 18th century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6208. Topics in Classical Drama and Culture. 1 Credit.

Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the 18th century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6209. Text I. 2 Credits.

Textual analysis emphasizing development of aesthetic expression. The forms and rules of verse: its meter, scansion, and overall structure in the early, middle, and late Shakespeare plays, as well as the intricacies of the prose.

ACA 6210. Text II. 2 Credits.

Textual analysis emphasizing development of aesthetic expression. The forms and rules of verse: its meter, scansion, and overall structure in the early, middle, and late Shakespeare plays, as well as the intricacies of the prose.

ACA 6211. Voice and Speech I. 3 Credits.

The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6212. Voice and Speech II. 2,3 Credits.

The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6213. Voice and Speech III. 3 Credits.

The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6214. Voice and Speech IV. 2 Credits.

The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6215. Movement I. 1,2 Credit.

The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6216. Movement II. 1,2 Credit.

The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6217. Movement III. 1,2 Credit.

The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6218. Movement IV. 1,2 Credit.

The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6219. Alexander Technique I. 1,2 Credit.

Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6220. Alexander Technique II. 1,2 Credit.

Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6221. Alexander Technique III. 1,2 Credit.

Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6222. Alexander Technique IV. 1,2 Credit.

Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6223. Stage Combat I. 2 Credits.

Skills in stage combat techniques, including unarmed combat and broadsword, buckler, rapier, dagger, and other lighter weapons, toward development of greater physical strength and an awareness of safety issues. The course is designed to lead to certification as an actor/combatant through the Society of American Fight Directors.

ACA 6224. Stage Combat II. 2 Credits.

Skills in stage combat techniques, including unarmed combat and broadsword, buckler, rapier, dagger, and other lighter weapons, toward development of greater physical strength and an awareness of safety issues. The course is designed to lead to certification as an actor/combatant through the Society of American Fight Directors.

ACA 6225. Practicum I. 2 Credits.

This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6226. Practicum II. 1-6 Credits.

This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6227. Practicum III. 1-6 Credits.

This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6228. Practicum IV. 1-6 Credits.

This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6229. Audition Techniques. 3 Credits.

A set of workshops to help students develop strong audition skills. Business aspects of acting, such as selection of agents, Equity status, and taxation issues. The workshop concludes with a showcase performance for casting directors, agents, and theatre directors.

ACA 6595. Selected Topics. 1 Credit.

ACCOUNTANCY (ACCY)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ACCY 2001. Intro Financial Accounting. 3 Credits.

The fundamental concepts underlying financial statements and the informed use of accounting information. Analysis and recording of business transactions; preparation and understanding of financial statements. Measurement of the profitability and financial position of a business. Restricted to sophomore standing. (Fall and spring).

ACCY 2002. Introductory Managerial Accounting. 3 Credits.

The use of accounting information to plan and control the activities of a business. Several widely used methods of determining the cost of business activities for use in making business decisions. Prerequisite: ACCY 2001. (Fall and spring).

ACCY 3101. Intermediate Accounting I. 3 Credits.

Financial accounting concepts underlying the preparation and interpretation of financial statements. Topics include revenue and expense recognition; accounting for receivables, inventories, fixed assets, intangible assets, and liabilities. Prerequisite: ACCY 2001.

ACCY 3102. Intermediate Accounting 2. 3 Credits.

Financial accounting concepts underlying the preparation and interpretation of financial statements. Topics include accounting for stockholders' equity, earnings per share, debt and equity investments, income taxes, pensions and other postretirement benefits, accounting changes, statements of cash flows, financial statement analysis, and disclosure. Prerequisite: ACCY 2001.

ACCY 3103. Advanced Financial and Tax Accounting. 3 Credits.

Financial and tax accounting issues relating to corporations and partnerships, including formation, operation, and liquidation of each type of entity. Financial accounting for corporate combinations. Prerequisite: ACCY 3101, ACCY 3401.

ACCY 3106. Financial Statement Analysis. 3 Credits.

Introduction to the analysis and interpretation of corporate financial statements within the context of a company's industry and economic environment. Cash flow analysis, profitability and risk analysis, accounting policy analysis, forecasting and performance analysis, elements of equity valuation, and decision perspectives of creditors. Prerequisite: ACCY 2002. (Fall and spring).

ACCY 3401. Federal Income Tax: Individuals. 3 Credits.

A study of federal income tax concepts, including what shall be taxed, and when, and at what rate. Taxable entities, income measurement, the use of different tax rates for different types of income, and the use of the tax laws to motivate taxpayer behavior to achieve economic goals. (Fall).

ACCY 3403. Advanced Tax. 3 Credits.

Taxation of partnerships, corporations, and their owners. Formation, operation, and liquidation of each type of entity. Financial and tax accounting for each type of transaction, with the goal of gaining a better understanding of each system by comparing and contrasting it with the other one. Prerequisites: ACCY 2001 & ACCY 3401. (Fall and spring).

ACCY 3601. Business Law: Contracts, Torts, and Property. 3 Credits.

Essential legal principles of contracts, torts, and property, including trusts and estates, leases, professional liability, and the Uniform Commercial Code. (Fall).

ACCY 4107. Advanced Accounting. 3 Credits.

Accounting for corporate combinations, foreign currency financial statements, and derivative financial instruments. Governmental and not-for-profit accounting. Prerequisites: ACCY 3101 and ACCY 3102. (Fall and spring).

ACCY 4201. Advanced Managerial Accounting. 3 Credits.

Techniques and practices that foster an informed use of financial information for planning, resource allocation, performance evaluation, and control purposes. Integration of concepts from other disciplines, especially economics, quantitative methods, behavioral science, and business policy and strategy. Primarily taught using case method. Prerequisite: ACCY 2002.

ACCY 4301. Auditing. 3 Credits.

A study of generally accepted auditing standards and accepted professional auditing practices and procedures, including reviewing and evaluating financial controls, auditing financial statements, and testing financial data of manual and automated accounting systems. Prerequisite: ACCY 3102. (Fall).

ACCY 4501. Accounting Systems. 3 Credits.

Introduction to the design and operation of accounting systems and data management controls. Principles and applications of internal control applicable to manual and automated accounting systems. Prerequisite: ACCY 3102. (Fall).

ACCY 4601. Business Law: Enterprise Organization. 3 Credits.

The legal aspects of organizing, financing, and operating an enterprise: agency, partnerships, corporations, securities regulation, insurance, secured credit financing, and commercial paper. Prerequisite: ACCY 2001. (Spring).

ACCY 4801. Financial Accounting Capstone. 3 Credits.

Synthesis and application of knowledge of financial accounting to specific contexts, using the perspectives of the preparer and user of financial statements. Prerequisite: senior status. (Spring).

ACCY 4900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Restricted to department approval. (Fall, spring, and summer).

ACCY 4995. Independent Study. 3 Credits.

Assigned topics. Admission by permission of the department chair. (Fall and spring).

ACCY 6101. Financial Accounting. 3 Credits.

The basic concepts and methods used in financial reports for understanding their content and context. The income statement, balance sheet, and statement of cash flows. Detailed accounting procedures and choices. How the most important accounting procedures are calculated and how different choices impact financial statements. Same as MBAD 6211.

ACCY 6104. Intermediate Accounting I. 3 Credits.

Accounting principles and concepts for financial accounting and reporting; emphasis on the preparation of general-purpose financial statements. Prerequisite: ACCY 6101/MBAD 6211.

ACCY 6105. Intermediate Accounting II. 3 Credits.

Financial accounting concepts underlying the preparation and interpretation of financial statements. Topics include accounting for stockholders' equity, earnings per share, debt and equity investments, income taxes, pensions and other post-retirement benefits, accounting changes, statement of cash flows, financial statement analysis and disclosure. Prerequisites: ACCY 6101 or MBAD 6211. (Fall and spring).

ACCY 6106. Financial Statement Analysis. 3 Credits.

Analysis and interpretation of financial statements for managers, stockholders, creditors, and financial analysts; ratio-driven financial analysis; earnings-based and cash-flow-based equity valuation; sales and EPS forecasting; preparation of projected financial statements. Prerequisites: ACCY 6101/MBAD 6211. (Fall, spring, and summer).

ACCY 6107. Corp Reorganizatn &Affiliation. 3 Credits.

Financial and tax accounting for intercorporate investments and corporate acquisitions and for consolidated groups of corporations. Consolidation procedures, accounting for goodwill, intercompany sales, foreign subsidiaries, and taxation of the corporations and their shareholders. Prerequisite: ACCY 6102, ACCY 6401. (Spring).

ACCY 6110. International Reporting and Control. 1.5 Credit.

International comparisons of forces that shape financial management, such as corporate governance mechanisms, tax policies, economic development, and privatization. Same as IBUS 6308.

ACCY 6111. International Accounting. 1.5 Credit.

Financial management in multinational enterprises: management techniques that improve international financial reporting and control, such as hedging foreign currency fluctuations, and controlling foreign subsidiaries. Prerequisite: ACCY 6101. Same as IBUS 6309.

ACCY 6112. International Financial Reporting Standards. 1.5 Credit.

Financial reporting standards that are used throughout most of the world other than the United States. Comparisons of these standards with those of the United States. Prerequisite: ACCY 6101/MBAD 6211. Same as IBUS 6310.

ACCY 6201. Managerial Accounting I. 1.5 Credit.

Effective use of accounting information in decision making and control of organizations. Same as MBAD 6213. Prerequisite: ACCY 6101/MBAD 6211.

ACCY 6202. Managerial Accounting II. 1.5 Credit.

Further topics in applying concepts of control and decision analysis to optimize the financial management of organizations. Prerequisite: ACCY 6201/MBAD 6213.

ACCY 6203. Controls, Alignment & the Org.. 1.5 Credit.**ACCY 6301. Contemporary Auditing Theory. 3 Credits.**

A comprehensive survey of contemporary auditing as practiced by external auditors (primarily certified public accountants) and internal auditors (those employed within government and corporate entities). Generally accepted auditing standards; government auditing standards. Planning, directing, and reporting on various audits. Prerequisite: ACCY 6101/MBAD 6211; corequisite: ACCY 6104.

ACCY 6302. Fraud Examination and Forensic Accounting. 3 Credits.

Financial statement fraud, misappropriation of assets, and methods of deterrence, prevention, detection, and investigation. Prerequisite: ACCY 6101/MBAD 6211; a course in auditing preferred but not required.

ACCY 6401. Federal Income Taxation. 3 Credits.

A study of federal income taxation, covering gross income, deductions and credits, sales and other disposition of property, capital gains and losses, and timing of income and deductions. (Fall and spring).

ACCY 6402. Federal Income Taxation of Partnerships. 3 Credits.

Financial and tax accounting for partnerships; formation and operation, distribution to partners, liquidation, and transfer of partnership interests. S corporations are also considered. Prerequisite: ACCY 6401.

ACCY 6403. Federal Income Taxation of Corporations. 3 Credits.

Federal income taxation of C corporations, covering formation, capital structure, nonliquidating distributions, complete liquidations, corporate accumulations, and the alternative minimum tax.

ACCY 6501. Accounting Information Systems and EDP. 3 Credits.

Development and application of accounting system theory, including analysis, design, control concepts, and implementation. Integration of electronic data processing, accounting systems, and management information systems. Prerequisite: ACCY 6101/MBAD 6211.

ACCY 6601. Business Law: Contracts, Torts, and Property. 3 Credits.

Essential legal principles of contracts, torts, and property, including trusts and estates, leases, professional liability, and the Uniform Commercial Code. (Fall).

ACCY 6602. Business Law: Enterprise Organization. 3 Credits.

The legal aspects of organizing, financing, and operating an enterprise: agency, partnerships, corporations, securities regulation, insurance, suretyship, secured credit financing, and commercial paper. (Spring and summer).

ACCY 6701. Government and Nonprofit Accounting and Auditing. 3 Credits.

The budgeting, accounting, financial reporting, and auditing required of federal, state, and local governments, nonprofit organizations, and colleges and universities. The financial practices and requirements applicable to organizations receiving governmental financial assistance and those subject to governmental audits. Prerequisite: ACCY 6101/MBAD 6211.

ACCY 6801. Corporate Governance and Ethics. 3 Credits.

The theory, practice, and public policy environment of corporate governance. Purpose, functioning, and responsibilities of boards of directors. Power, control, and compensation of corporate management. Shareholders and stakeholders. Corporate governance in comparative national settings. Same as SMPP 6215.

ACCY 6900. Special Topics. 1-3 Credits.

Experimental offering; new course topics and teaching methods. (Fall and spring).

ACCY 6998. Directed Readings and Research. 1-3 Credits.**ACCY 8001. Doctoral Seminar. 1-12 Credits.**

Reasoning and research in technical areas of accounting; theoretical issues and their application to practice; conceptual themes in professional literature; comparative accounting research analyses. (Fall and spring).

ACCY 8002. Doctoral Seminar. 0-3 Credits.**ACCY 8009. Dissertation Research. 1-12 Credits.**

Limited to doctoral candidates. May be repeated for credit.

ACCY 8999. Advanced Reading and Research. 1-12 Credits.

Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

AFRICANA STUDIES (AFST)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

AFST 1001. Introduction to Africana Studies. 3 Credits.

An interdisciplinary introduction to the study of people of Africa and the African diaspora in historical context. Links in the cultural, political, and intellectual experiences of people of African descent in the Americas, Caribbean, Europe, and Africa.

AMERICAN STUDIES (AMST)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

AMST 1000. Dean's Seminar. 3 Credits.**AMST 1050. Explorations in American Culture. 0-3 Credits.**

Exploration of different aspects of American culture depending on the topic. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AMST 1070. The American Cinema. 3 Credits.

History and criticism of American films. The course enables the student to recognize and evaluate cinema techniques, to express the evaluation clearly in writing, and to understand the role of films in the context of American culture. Laboratory fee. Same as AH 1070.

AMST 1100. Politics and Film. 0-3 Credits.

How American films interpret and challenge political power in America.

AMST 1160. Race, Gender and Law. 0-3 Credits.

Significant civil rights cases, critical race theory, feminist theory, and current public policy debates on domestic violence, mass imprisonment, sexual assault, and racial profiling.

AMST 1200. The Sixties in America. 3 Credits.**AMST 2010. Early American Cultural History. 3 Credits.**

How culture was important in the creation of the United States—in its origins as a colonial outpost and its expansion across the continent; in its hierarchies and expressions of power, especially as organized by race, class, ethnicity, or gender; in the creation of democracy and the valuing of free expression; and in the development of cities and the varied uses of the countryside. Same as HIST 2010.

AMST 2011. Modern American Cultural History. 3 Credits.

The effects of culture in the shaping of the United States since 1876. The role of the mass media; effects of cultural conceptions on the physical landscape; changing ideas of race, ethnicity, gender, and sexuality; and the political meanings of cultural conflict. Transnational influences on U.S. culture and effects of U.S. culture abroad. Same as HIST 2011.

AMST 2020. Washington, D.C.: History, Culture, and Politics. 0-3 Credits.

Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same as HIST 2020.

AMST 2020W. Washington, D.C.: History, Culture, and Politics. 0-3 Credits.

Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same as HIST 2020.

AMST 2071. Introduction to the Arts in America. 3 Credits.

A survey of American art from the period of colonial exploration and settlement to the postmodern present. Political and social meanings of painting, sculpture, architecture, prints, and photographs. The relationship of art to religion and nationalism; issues of class, race, and gender. Same as AH 2071.

AMST 2120. Freedom in American Thought and Popular Culture. 0-3 Credits.**AMST 2120W. Freedom in American Thought and Popular Culture. 0-3 Credits.**

America was founded on the premise of providing freedom to its people. But what, exactly, is freedom? The question has been debated in America since its founding and continues today; this course examines varied answers provided by American political thought and popular culture. Same as PSC 2120.

AMST 2125. Varieties of Feminist Theory. 3 Credits.

Classical and contemporary texts on feminist explanations of women's status. Relationships within the sex/gender system and arrangements based on class and race. Evaluation, through the lens of feminist theory, of several academic disciplines in the sciences, social sciences, and humanities. Same as WSTU 2125. Prerequisite: WSTU 1020 or WSTU 2120 or permission of instructor.

AMST 2144. Explorations in Historical Geography. 3 Credits.

Examination of selected themes in the cultural geography of the United States over the course of its history, in relation to an overview of the historical geography of the country. Same as GEOG 2144.

AMST 2320. U.S. Media and Cultural History. 3 Credits.

History and analysis of 20th-century U.S. media and culture, including the rise of consumer culture, film, and television. Racial, gendered, and national identities in the context of modernism, mass culture, and globalization. Same as HIST 2320.

AMST 2350. U.S. Religion and Politics. 3 Credits.

How religion and politics have influenced each other in the United States and how Americans have understood those influences. Religious violence; conflicts between faith and science; religious factors in racial and gender politics; and the separation of church and state. Same as HIST 2350.

AMST 2380. Sexuality in US History. 3 Credits.

Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as HIST 2380/ WSTU 2380.

AMST 2410. 20th-Century U.S. Immigration. 3 Credits.

Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Same as HIST 2410.

AMST 2440. The American City. 3 Credits.

An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Same as HIST 2440.

AMST 2490. Themes in U.S. Cultural History. 3 Credits.

Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as HIST 2490.

AMST 2490W. Themes in U.S. Cultural History. 3 Credits.

Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as HIST 2490.

AMST 2495. Special Topics in African American History. 3 Credits.

Concentration on specific issues central to the African American experience. Consult the Schedule of Classes for issues to be addressed.

AMST 2520. American Architecture I. 3 Credits.

Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning. Buildings are analyzed both as artifacts and as signifiers of social, cultural, and economic tendencies. 1600-1860. Same as AH 2154.

AMST 2521. American Architecture II. 3 Credits.

Continuation of AMST 2520. Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning. Buildings are analyzed both as artifacts and as signifiers of social, cultural, and economic tendencies. 1860-present. Same as AH 2155.

AMST 2533. Material Culture in America. 3 Credits.

Review and analysis of the cultural messages embedded in our material surroundings. Consideration of a range of humanly created artifacts, ranging from specific objects to vast landscapes. Same as ANTH 2533.

AMST 2710. The United States in Global Context, 1898-Present. 0-3 Credits.

How the 20th- and 21st-century U.S. has been engaged globally, both politically and culturally, with attention to global culture, transnational ideas and social movements, foreign policy, and economic transformations. Same as HIST 2710.

AMST 2730. World War II in History and Memory. 0-3 Credits.

Examination of Americans' histories and memories of World War II. Same as HIST 2730.

AMST 2730W. World War II in History and Memory. 0-3 Credits.

Examination of Americans' histories and memories of World War II. Same as HIST 2730.

AMST 2750. Latinos in the United States. 0-3 Credits.

AMST 2750W. Latinos in the United States. 0-3 Credits.
Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. Same as ANTH 2750.

AMST 3151. American Art in the Age of Revolution. 3 Credits.

Same as AH 3151.

AMST 3324. US Urban History. 3 Credits.

History of American urban life and culture from the colonial era to the present, focusing on transitions from pre-industrial to industrial and post-industrial forms. The social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as HIST 3324.

AMST 3350. US Social History. 3 Credits.

AmSt 3350: Daily life, institutions, intellectual and artistic achievements of the agrarian era, 1607-1861. Amst 3351: The urban-industrial era from 1861 to present. Same as Hist 3350-3351.

AMST 3351. US Social History. 0-3 Credits.

The urban-industrial era from 1861 to present. Same as HIST 3351.

AMST 3352. Women in the United States I. 3 Credits.

Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as HIST 3352/ WSTU 3352.

AMST 3352W. Women in the United States. 3 Credits.

Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as HIST 3352/ WSTU 3352.

AMST 3353. Women in the United States II. 3 Credits.

Continuation of AMST 3352. Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as HIST 3353/ WSTU 3353.

AMST 3360. African American History I. 3 Credits.

Survey of the African American experience, emphasizing the contributions of black Americans to and their impact upon American history. Same as HIST 3360.

AMST 3361. African American History II. 3 Credits.

Continuation of AMST 3360. Survey of the African American experience, emphasizing the contributions of black Americans to and their impact upon American history. Same as HIST 3361.

AMST 3362. Black Women in U.S. History. 3 Credits.

Black women from the Middle Passage to contemporary times. Same as HIST 3362/WSTU 3362.

AMST 3362W. Black Women in U.S. History. 3 Credits.

Black women from the Middle Passage to contemporary times. Same as HIST 3362/WSTU 3362.

AMST 3810. Building Cities. 3 Credits.

An examination of historical and contemporary trends and dynamics in urban planning in the United States and abroad. Same as GEOG 3810. Prerequisite: GEOG 1001.

AMST 3811. Historical Archaeology. 3 Credits.

Survey of the basic data and methods of research in the material culture of recent history. Same as ANTH 3811.

AMST 3835. Historical Archaeology Field Program. 3 Credits.

Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as ANTH 3835.

AMST 3900. Critiquing Culture. 3 Credits.

Modes of analysis, including ethnography and other cultural studies methods, applied to examination of the interaction of cultural texts and practices with structures of power. Theories and themes central to American studies; scholarly debate about mass culture, ideology, visuality, discourse, and affect. For departmental majors; minors admitted with permission of instructor.

AMST 3900W. Cultural Criticism in America. 3 Credits.

Modes of analysis, including ethnography and other cultural studies methods, applied to examination of the interaction of cultural texts and practices with structures of power. Theories and themes central to American studies; scholarly debate about mass culture, ideology, visuality, discourse, and affect. For departmental majors; minors admitted with permission of instructor.

AMST 3901. Examining America. 3 Credits.

Modes of power and forms of identification within and across U.S. national borders. Social constructions of the nation; forms of diversity and identity, such as race, gender, and sexuality; and the transnational flow of people, ideas, culture, and religion. For departmental majors; minors admitted with permission of instructor.

AMST 3950. Special Topics. 3 Credits.

May be repeated for credit provided the topic differs. Topic announced in the Schedule of Classes.

AMST 3950W. Special Topics. 3 Credits.

May be repeated for credit provided the topic differs. Topic announced in the Schedule of Classes.

AMST 4400. Independent Study. 1-3 Credits.

Open to a limited number of American studies majors as directed research or as an internship with a Washington museum or historical society. Approval of advisor required.

AMST 4450. Internship. 1-3 Credits.

Open to a limited number of American studies majors pursuing an internship directly related to the study of American culture. Students must make the case for a scholarly project that emerges from the internship and must write a significant final paper. Approval of a supervising faculty member required for registration. P/NP grading only.

AMST 4500. Proseminar in American Studies. 3 Credits.

For American studies majors. Directed research and writing on special topics. Prerequisite: at least two of the required courses for the major (AMST 2010, AMST 2011, AMST 3900, AMST 3901). May be repeated for credit provided the topic differs.

AMST 4500W. Proseminar in American Studies. 3 Credits.

For American studies majors. Directed research and writing on special topics. Prerequisite: at least two of the required courses for the major (AMST 2010, AMST 2011, AMST 3900, AMST 3901). May be repeated for credit provided the topic differs.

AMST 4510. Senior Honors Thesis. 3 Credits.**AMST 5701. Selected Topics. 0-4 Credits.****AMST 5701W. Selected Topics. 0-4 Credits.****AMST 6100. Scope and Methods in American Studies. 3 Credits.**

Consideration of American studies as an area for research and teaching; introduction to bibliography. Required of candidates for the degree of Master of Arts in the field of American studies.

AMST 6110. Cultural Theory and American Studies. 3 Credits.

Major issues in critical and cultural theory as they relate to American culture. Various interpretive approaches including discourse analysis, cultural studies, new historicism, anthropological theory, etc. Prerequisite: AMST 6100 or permission of instructor.

AMST 6120. Theories and Practices in the Study of Media. 3 Credits.

Examination of theories and methods in the study of media and popular culture; case studies explore specific issues related to cultural products such as film, television, music, and the Internet.

AMST 6190. Topics in American Studies. 3 Credits.

May be repeated for credit provided the topic differs.

AMST 6195. Research Seminar in American Studies. 3 Credits.

May be repeated for credit provided the topic differs.

AMST 6210. The United States in a Global Context. 3 Credits.

Analysis of the cultural constructions of the nation and international power, comparing the context of the 18th and 19th century, European colonialism, and U.S. expansion in the 20th century. The role of literature and mass media in furthering the logic of globalization. Readings are both theoretical and historical.

AMST 6410. Readings in American Cultural History. 3 Credits.

Studies in the cultural history of the United States.

AMST 6420. Religion & American Culture. 3 Credits.

Interdisciplinary analysis of religious beliefs, practices, and representations in the United States, as well as intersections of the religious and the secular. Relationships of religion to race, gender, capitalism, science, mass media, and material culture. Same as HIST 6420.

AMST 6430. Gender, Sexuality, and American Culture. 3 Credits.**AMST 6431. Gender, Sexuality, and American Culture. 3 Credits.**

Continuation of AMST 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as HIST 6431/ WSTU 6431.

AMST 6435. Readings on Women in American History. 3 Credits.

Important works in American women's history; evolution of the field in historiographical context. Same as HIST 6435/ WSTU 6435.

AMST 6450. Race in America. 3 Credits.

Interdisciplinary analysis of the history of race and its changing political, social, and cultural meanings in the United States. Transnational racial formations, struggles for and against civil rights, multiracialism, and interracialism. Same as HIST 6450.

AMST 6455. American Social Movements. 3 Credits.

The history of social movements in the United States, with emphasis on civil rights, feminism, conservatism, and labor in local, national, and transnational contexts; the historical rise and fall of these movements and their larger impact on American life. Same as HIST 6455.

AMST 6470. Cityscapes. 3 Credits.

Interdisciplinary examination of the American city, including urban theory, history, planning, architecture, urban politics, and cultural representations of the city. Same as HIST 6470.

AMST 6475. US Urban History. 3 Credits.

History of American urban life and culture from the Colonial era to the present, focusing on the transitions from pre-industrial to industrial and post-industrial forms, the social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as HIST 6475.

AMST 6480. Theory and Practice of Public History. 3 Credits.

Theoretical and practical dimensions of public history, as illustrated by recent controversies surrounding public exhibitions and debates on revisionist history as well as more traditional means of presenting the past in public forums. Same as HIST 6480.

AMST 6495. Historic Preservation: Principles and Methods. 3 Credits.

The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as HIST 6495.

AMST 6496. Historic Preservation: Principles and Methods. 3 Credits.

Continuation of AMST 6495. The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as HIST 6496.

AMST 6520. Economics of Preservation. 3 Credits.

Analysis of economic techniques and benefits used to encourage the retention and reuse of historic buildings and districts in the United States. Emphasis on revitalization of older commercial centers and the Mainstreet program. Prerequisite: Permission of instructor.

AMST 6525. The Politics of Historic Preservation. 3 Credits.

Overview of the political issues, forces, events, and players that have shaped contemporary preservation practice, with an emphasis on public policy issues that have not been resolved and continue to confront preservation objectives. Prerequisite: Permission of instructor.

AMST 6530. Field Methods in Architectural Documentation. 3 Credits.

In-depth thematic examination of cultural landscape, focusing on field techniques for recording, analysis, and interpretation of historic properties. Work at field sites is supplemented by lectures, discussion, and readings.

AMST 6550. Seminar in American Architecture. 3 Credits.

Advanced research problems addressing artistic, cultural, social, technical, and urbanistic aspects of American architecture in the 19th and 20th centuries. Topics vary. Prerequisite: AMST 2520 or AMST 2521, or permission of instructor.

AMST 6560. Vernacular Architecture. 3 Credits.

AMST 6561. Seminar: American Folklife. 3 Credits.

Research and discussion on the traditional cultures of various geographical regions of the United States. Analysis of folk art, craft, and architecture; regional and ethnic identities. Same as ANTH 6561.

AMST 6562. Folklore Theory. 3 Credits.

An intellectual history of American folklore research; analysis of particular theories and methods. Same as ANTH 6562.

AMST 6563. Topics in American Folklife. 3 Credits.

A seminar devoted to a variety of subjects related to folklore and folklife, such as public folklore policy, folk music, or ethnic folklore and culture. Specific topic to be determined by the interests of available faculty and the needs of the folklife program.

AMST 6709. Interpretation in the Historic House Museum. 3 Credits.

Seminar integrating advanced practices of museum education with current scholarship in architectural history, material culture, and social history. Extensive use of Washington museum resources. Admission by permission of instructor. Same as EDUC 6709.

AMST 6710. American Material Culture. 3 Credits.

Opportunities for research and publication based on historical objects in the collections of the Smithsonian Institution.

AMST 6720. American Decorative Arts I. 3 Credits.

Recognition and evaluation of domestic artifacts from the 17th, 18th, and 19th centuries.

AMST 6721. American Decorative Arts II. 3 Credits.

Continuation of AMST 6720. Recognition and evaluation of domestic artifacts from the 17th, 18th, and 19th centuries.

AMST 6730. Studies in American Art and History. 3 Credits.

Selected problems and themes in American cultural history involving the use of artistic materials in different media; emphasis on methodology and analytic techniques. May be repeated for credit. Same as AH 6255.

AMST 6835. Historical Archaeology Field Program. 3 Credits.

Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as ANTH 6835.

AMST 6930. Independent Study. 3 Credits.

Limited to master's and doctoral candidates. Written permission of instructor required.

AMST 6998. Thesis Research. 3 Credits.

AMST 6999. Thesis Research. 3 Credits.

AMST 8998. Advanced Reading and Research. 3-9 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

AMST 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

ANATOMY & REGENERATIVE BIOLOGY (ANAT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ANAT 2130. Human Embryology. 3 Credits.

Development of the basic organ systems; molecular control of development, congenital birth defects, and assisted reproductive technologies.

ANAT 2150. Human Microscopic Anatomy. 3 Credits.

Normal histological structure of cells, tissues, and organs. Structural-functional correlates; the relationship between histological structure-function and the etiology of disease states.

ANAT 2160. Human Functional Neuroanatomy. 3 Credits.

The central and peripheral nervous systems; diseases and injuries with impact on the normal structural-functional relationship.

ANAT 2181. Human Gross Anatomy. 3 Credits.

Structure and function of the musculoskeletal system; regional organization, structure, and function of the major organ systems; structural organization of the head and neck. Same as BISC 2581.

ANAT 6130. Clinically Oriented Human Embryology. 3 Credits.

The mechanisms of human embryology with clinical correlations of embryological development. Developmental control mechanisms and development of basic organ systems. Molecular control of development. Assisted reproductive technologies. Congenital birth defects. Demonstration labs and online animations for clinical correlates. Restricted to Students enrolled in Graduate Certificate in Anatomical and Translational Sciences only. Recommended background: Introductory course in biology or its equivalent. (Fall).

ANAT 6150. Clinically Oriented Human Microscopic Anatomy. 3 Credits.

The normal histological structure of cells, tissues, and organs of the human body with emphasis on clinical relevance. Because there is an inseparable relationship between structure and function, emphasis is placed on structural/functional correlates at both the light and electron microscopic levels. Descriptions of alterations in normal histology through disease or injury provide an understanding of the etiology of various disease states. Integration of histological concepts with clinical correlates. Restricted to Graduate Certificate in Anatomical and Translational Sciences. Prerequisites: Introductory Biology for Science or non-Science Majors. (Spring).

ANAT 6160. Clinically Oriented Human Functional Neuroanatomy. 3 Credits.

Structure/function relationships of the human central and peripheral nervous systems and clinical correlations of diseases or injuries whose occurrence or expression has an abnormal impact on the normal structure/function relationship. Integration of neuroanatomy concepts with contemporary clinical neuroscience. Demonstrations of human brain material in the anatomy lab. Restricted to Graduate Certificate in Anatomical and Translational Sciences only. Prerequisites: Introductory Biology for Science or non-Science Majors. (Fall).

ANAT 6181. Clinically Oriented Human Gross Anatomy. 3 Credits.

Structural organization of the human body and the relationship of the organization to regional and systems-related functions. Clinical implications and how disease or injury affects normal anatomical structure/function relationships. Clinical cases match the topic of each lecture. Online manual uses content from the department's NetAnatomy website. Demonstrations in the gross anatomy laboratory. Restricted to Graduate Certificate in Anatomical and Translational Sciences. Prerequisites: Introductory Biology for Science or non-Science Majors. (Spring).

ANAT 6182. Fundamentals of Regenerative Biology and Systems Physiology. 4 Credits.

This course is similar to BMSC 8212 but with additional time to introduce techniques of confocal laser scanning microscopy and laser-based quantitative and functional cell analyses. Topics include genetic control mechanisms, cell signaling pathways, and tissue regeneration and repair. Introduction of concepts on the functions and regulation of organ systems complement the learning objectives of human gross anatomy and microscopic anatomy. Restricted to Graduate Certificate in Anatomical and Translational Sciences. Prerequisites: Introductory Biology for Science or non-Science Majors. (Fall).

ANAT 6203. Human Developmental Anatomy. 1 Credit.

ANAT 6204. Neuroanatomy. 2 Credits.

ANAT 6210. Gross Anatomy. 6 Credits.

Required for medical students.

ANAT 6212. Neurobiology. 3 Credits.

Same as Idis 212.

ANAT 6213. Microscopic Anatomy. 4 Credits.

Required for medical students.

ANAT 6215. Anatomy-Health Sci Students. 4 Credits.

Gross structure of the human body, including musculoskeletal, nervous, endocrine, cardiovascular, respiratory, gastrointestinal, urinary, and reproductive systems. Laboratory work is limited to prosected specimens.

ANAT 6216. Cellular Anatomy & Histology. 2 Credits.

ANAT 6221. Spec Topics-Stem Cell Biology. 1-3 Credits.

ANAT 6222. Spec Topics-Stem Cell Biology. 1-3 Credits.

ANAT 6223. Special Topics in Regenerative Medicine. 1 Credit.

Students attend seminars given by invited lecturers to present their research findings and breakthroughs on topics of regenerative medicine. Seminars can be sponsored by the Department of Anatomy and Regenerative Biology, the Stem Cell Interest Group Journal and Data Club, the Molecular Medicine Graduate Program (MMED 8214), and the GW Institute for Neuroscience. Restricted to Graduate Certificate in Anatomical and Translational Sciences only. Prerequisites: Introductory Biology for Science or non-Science Majors. (Fall and spring).

ANAT 6249. Intro to Anatomical Research. 1 Credit.

ANAT 6252. Human Variation. 1 Credit.

ANAT 6253. Developmental Neurobiology. 3 Credits.

ANAT 6260. Developmental Genetics. 2 Credits.

ANAT 6262. Gross Anat-Upper/Lower Extrem. 2 Credits.

ANAT 6264. Gross Anatomy of Head & Neck. 2 Credits.

ANAT 6266. Gross Anatomy-Thorax & Abdomen. 2 Credits.

ANAT 6268. Gr Anat-Pelvis/Perineum/Low Ex. 2 Credits.

ANAT 6275. Advanced Studies in Translational Sciences. 2 Credits.

Student research opportunities in laboratories conducting translational research. Application of fundamental concepts learned in didactic courses. Development of versatility with new technologies. Students spend the equivalent of two full days in a research laboratory during the semester. The course director must approve all laboratory assignments prior to initiating research studies in a laboratory. Restricted to students in the Graduate Certificate in Anatomical and Translational Sciences. Prerequisites: Introductory Biology for Science or non-Science Majors. (Fall and spring).

ANAT 6276. Advanced Studies in Anatomy. 1 Credit.

Detailed study of an anatomic topic.

ANAT 6277. Special Topics in Neurobiology. 1-3 Credits.

ANAT 6279. Applied Regional Anatomy. 1-5 Credits.

Regional dissection, guided readings.

ANAT 6284. Appl Surface Anat & Radiology. 5 Credits.

ANAT 6288. Surface Anatomy and Radiology. 1 Credit.

ANAT 6291. Special Projects in Anatomy. 1-12 Credits.

Independent study on any aspect of gross anatomy.

ANAT 6292. Projects in Anatomical Sciences. 2 Credits.

Various imaging techniques and approaches to visualize normal anatomy toward development and application of skills in teamwork, presentation, and discussion. Literature searches. The course is taken in conjunction with ANAT 6181. Restricted to Graduate Certificate in Anatomical and Translational Sciences. Prerequisites: ANAT 6181. Recommended background: Human clinically-oriented gross anatomy (previously or simultaneously). (Spring).

ANAT 6295. Research. 1-12 Credits.

ANAT 8501. Didactic Anatomy. 3 Credits.

Development of a didactic program to include human developmental anatomy, microscopic anatomy, gross anatomy, and/or neuroanatomy. May also include interdepartmental study.

ANAT 8800. Summer Remedial: Gross Anatomy. 6 Credits.

ANAT 8802. Summer Remedial: Human Dev Anat. 1 Credit.

ANTHROPOLOGY (ANTH)

Explanation of Course Numbers

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ANTH 1000. Dean's Seminar. 3 Credits.

ANTH 1001. Biological Anthropology. 0-4 Credits.

Survey of human evolution, genetics and physical variation, and primatology. Regular laboratory exercises. Laboratory fee. (Fall and spring).

ANTH 1002. Sociocultural Anthropology. 3 Credits.

Survey of the world's cultures, illustrating the principles of cultural behavior. (Fall and spring).

ANTH 1002W. Sociocultural Anthropology. 3 Credits.

Survey of the world's cultures, illustrating the principles of cultural behavior.

ANTH 1003. Archaeology. 0-3 Credits.

Introduction to archaeological survey and excavation techniques and laboratory methods of dating and analysis. Brief history of archaeology and survey of world prehistory. Films and laboratory exercises. (Fall and spring).

ANTH 1004. Language in Culture and Society. 3 Credits.

Comparison and analysis of how cultures use language to communicate. The relationship of language to issues of human nature, gender, race, class, artistic expression, and power. Laboratory fee. (Spring and summer).

ANTH 1005. The Biological Bases of Human Behavior. 4 Credits.

Human behavior from an evolutionary perspective, including issues such as communication, intelligence, reproductive behavior, parental behavior, aggression, and cooperation, and drawing on an understanding of the behavior and biology of the nonhuman primates. Laboratory fee.

ANTH 2008. Foundations of Anthropological Thought. 3 Credits.

The development of anthropological thought in historical context. Exploration of selected basic concepts and theories of contemporary anthropology. To be taken in the junior or senior year. Prerequisite: ANTH 1002.

ANTH 2008W. Foundations of Anthropology. 3 Credits.

The development of anthropological thought in historical context. Exploration of selected basic concepts and theories of contemporary anthropology. To be taken in the junior or senior year. Prerequisites: ANTH 1002 or ANTH 1002W. (Fall).

ANTH 2501. The Anthropology of Gender: Cross-Cultural Perspectives. 3 Credits.

Anthropological representations of gender relations in "other" cultures have provided important case material for feminist theorizing of sex differences and gender roles and statuses. How a cross-cultural approach can inform our understanding of gender. Same as WSTU 2121.

ANTH 2502. Anthropology of Science and Technology: 21st-Century Brave New Worlds. 3 Credits.

The relationship between science and society, with consideration of how scientific knowledge and emergent technologies affect our lives, identities, social relations, and material conditions. The sociopolitical context in which scientific knowledge is produced and the ethnographic study of biotechnology, especially genetics and its various applications. (Fall, even years).

ANTH 2505. Introduction to Ethnomusicology. 3 Credits.

Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Same as MUS 2105. Prerequisite: MUS 1101 or ANTH 1002 or ANTH 1004 or permission of instructor.

ANTH 2506. Religion, Myth, and Magic. 3 Credits.

Theories of religion developed by anthropologists; survey of world religions with emphasis on non-Western societies; religious process and change. (Same as REL 3506) (Fall).

ANTH 2533. Material Culture in America. 3 Credits.

Review and analysis of the cultural messages embedded in our material surroundings. Consideration of a range of humanly created artifacts, ranging from specific objects to vast landscapes. Same as AMST 2533.

ANTH 2750. Latinos in the United States. 0-3 Credits.

ANTH 2750W. Latinos in the United States. 0-3 Credits.
Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. Same as AMST 2750.

ANTH 3401. Human Functional Anatomy. 3 Credits.

The anatomy of the human body, how it works, and how it differs from other animals, especially other primates. Principles and approaches of functional morphology and biomechanics and how function can be reconstructed from fossils, with special focus on the musculoskeletal system. No prior knowledge of anatomy is required. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3402. Human Evolutionary Anatomy. 3 Credits.

The structure and function of human anatomy, as compared to our closest relatives, the great apes. Using this comparative approach, the course investigates the fossil record of human evolution, with an emphasis on reconstructing relationships, function, behavior, and adaptation in fossil hominins. Prerequisite: ANTH 1001.

ANTH 3403. Forensic Anthropology Laboratory. 2 Credits.

Identification of human skeletal remains by body part, age, sex, race, and individual disease or trauma history; study of skeletal variation in modern and recent populations. Taught at the Smithsonian. Corequisite: Anth 3404. (Spring).

ANTH 3404. Human Variation. 1 Credit.

An overview of human variation, with special emphasis on the skeleton. Includes history of physical anthropology, individual and population variations, archaeological recovery of human remains, paleodemography, growth, paleopathology, and forensic anthropology. Prerequisite: Anth 1001; corequisite for undergraduates: ANTH 3403.

ANTH 3405. Human Growth and Development. 3 Credits.

Modern human growth and development considered through an evolutionary perspective. The growth stages and life cycles of modern humans, emphasizing physiological and environmental influences and comparisons with extant non-human primates and fossil hominids. Prerequisite: ANTH 1001. Laboratory fee.

ANTH 3406. Advanced Human Osteology. 3 Credits.

Advanced techniques in determination of age, sex, ancestry, and pathological conditions using the skeleton. Taught at the Smithsonian. Prerequisite: ANTH 3403, ANTH 3404.

ANTH 3408. The Evolution of Human Families. 3 Credits.

Human parental behavior considered from an evolutionary perspective, including parental care among mammals, concepts of parental investment, and parent-offspring conflict. Focus on parenting in the human lineage from early hominins to hunter-gatherers to the modern context. Prerequisites: ANTH 1001. (Spring, odd years).

ANTH 3411. Primatology. 3 Credits.

Physical and behavioral characteristics of the various primate groups and their relationship to human physical and cultural evolution. Prerequisite: ANTH 1001.

ANTH 3412. Hominin Evolution. 3 Credits.

The fossil record of human evolution, including its context. Review of the fossil evidence that concentrates on the distinctive features of each taxon. Pleistocene remains. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3412W. Hominin Evolution. 3 Credits.

The fossil record of human evolution, including its context. Review of the fossil evidence that concentrates on the distinctive features of each taxon. Pleistocene remains. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3413. Evolution of the Human Brain. 3 Credits.

Examination of how the human brain is unique in comparison to other animals, with an emphasis on understanding our species' distinctive neurobiology in terms of the evolution of cognitive abilities such as language, social comprehension, tool making, and abstract thinking.

ANTH 3491. Topics in Biological Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. Instructors will be drawn from GW faculty and Smithsonian Institution staff. May be repeated for credit if topic varies. Prerequisite: ANTH 1001.

ANTH 3501. Anthropology of Development. 3 Credits.

The impact of the world economy on nonindustrial societies. Analysis of the role of anthropology in international development programs aimed at alleviating problems in the Third World. Prerequisites: ANTH 1002 or ANTH 1002W. (Fall and spring).

ANTH 3502. Cultural Ecology. 3 Credits.

Basic principles of cultural ecology. Human interaction with the ecosystem both past and present; emphasis on the application of anthropological precepts to current environmental problems. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004 or ANTH 1004W or permission of instructor. (Fall).

ANTH 3503. Psychological Anthropology. 3 Credits.

The cross-cultural study of the relationship between culture and personality. Topics include emotion, conceptions of the self, mental health and illness, sexuality, marriage and parenting, and cognition. Psychobiological, cultural, ecological, and psychoanalytical theories are examined. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3504. Illness, Healing, and Culture. 3 Credits.

Introduction to medical anthropology. What the record of human evolution and prehistory tells about human health; the epidemiology of health and illness; how different cultures define disease; understanding illness and healing systems cross-culturally; and the role of medical anthropology in health care and international development. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3506. Politics, Ethnicity, and Nationalism. 3 Credits.

Comparative analysis of political systems; political processes, such as factionalism, styles of leadership, political ritual. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3507. Kinship, Family, and Community. 3 Credits.

Cross-cultural analysis of how people form, maintain, and transform social groups and boundaries. Focus on how communities such as family, ethnic group, and nation are defined in moral terms. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3508. Art and Culture. 3 Credits.

The role of art in culture, with emphasis on small-scale societies; influences upon the artist, and beliefs and practices associated with art production. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3513. Anthropology of Human Rights. 3 Credits.

Issues of basic human rights and their violation by different cultures, states, and organizations. Genocide, ecocide, abuses on the basis of ethnicity, religion, or similar factors, and the treatment of those seeking asylum. Rights of informants and groups studied in anthropological research. Prerequisites: ANTH 1002 or ANTH 1002W. (Fall and spring).

ANTH 3513W. Anthropology of Human Rights. 3 Credits.

Issues of basic human rights and their violation by different cultures, states, and organizations. Genocide, ecocide, abuses on the basis of ethnicity, religion, or similar factors, and the treatment of those seeking asylum. Rights of informants and groups studied in anthropological research. Prerequisites: ANTH 1002 or ANTH 1002W. (Fall and spring).

ANTH 3521. Ethnographic Film. 3 Credits.

Still and motion-picture photography as an integral aspect of anthropological research. A study of recent and historic ethnographic films and an introduction to the forms and methods of making visual ethnographic records. Material fee. Prerequisites: ANTH 1002 or ANTH 1002W or permission of instructor. (Fall, odd years).

ANTH 3531. Methods in Sociocultural Anthropology. 3 Credits.

Approaches to field research. Conceptual bases and biases in the delineation of problems and in the selection, analysis, and organization of data. Students design and carry out their own field projects in the Washington area. Prerequisite: ANTH 1002.

ANTH 3601. Language, Culture, and Cognition. 3 Credits.

The role of language and culture in the organization of human experience. Beginning with debates about linguistic relativity, the course explores the way language use shapes cognition and practice in a variety of cultures and social contexts. Same as LING 3601. Prerequisite: ANTH 1004. Laboratory fee.

ANTH 3602. Ethnographic Analysis of Speech. 3 Credits.

Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. Prerequisites: ANTH 1004. (Same as LING 3602) (Fall, even years).

ANTH 3602W. Ethnographic Analysis of Speech. 3 Credits.

Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. (Same as LING 3602.) (Fall, even years).

ANTH 3603. Psycholinguistics. 3 Credits.

Language as species-specific property of the human mind. Psychological processes involved in the encoding and decoding of language; first and second language acquisition and bilingualism. Same as LING 3603.

ANTH 3691. Special Topics in Linguistic Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as LING 3691.

Prerequisite: ANTH 1004 or permission of instructor.

ANTH 3701. Native Peoples - North America. 3 Credits.

Comparative study of Indian groups representative of the different culture areas of the United States and Canada.

Contemporary issues involving indigenous groups, the wider society, and the state. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3702. Anthropology of Latin America. 3 Credits.

Culture history and ways of life in a selected region of Central or South America. Regional focus to be announced in the Schedule of Classes. Prerequisites: Anth 1002 or Anth 1002W or ANTH 1004. (Spring).

ANTH 3703. Cultures of the Pacific. 3 Credits.

Culture history and ways of life among native peoples of Melanesia, Micronesia, and Polynesia. Prerequisites: ANTH 1002 or 1002W or 1004 or 1004W. (Spring, even years).

ANTH 3704. Cultures of Southeast Asia. 3 Credits.

Introduction to the history, art, ecology, and politics of Southeast Asia. Comparison and interpretation of recent ethnographic case studies, archaeological evidence, and current political events in order to understand the diversity of Southeast Asian traditions. Prerequisite: ANTH 1002 or ANTH 1002W or ANTH 1004. (Summer).

ANTH 3705. Anthropology of East Asia. 3 Credits.

Intensive study of the culture and history of selected peoples of East or Central Asia. Specific area to be announced in the Schedule of Classes. May be repeated for credit. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004 or ANTH 1004W. (Spring).

ANTH 3707. Anthropology of the Middle East. 3 Credits.

Geographic environment, language, religion, and social structure of settled and nomadic peoples of the Middle East; emphasis on the Arab world. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004 or ANTH 1004W. (Fall).

ANTH 3708. Anthropology of Africa. 3 Credits.

Comparative examination of the history, cultural development, and contemporary problems of sub-Saharan African cultures. New World African cultures are also considered. Prerequisites: ANTH 1002 or 1002W or 1004 or 1004W. (Fall).

ANTH 3709. Japanese Culture Through Film. 3 Credits.

Survey of the Japanese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from premodern times to the modern era. Lectures and discussion in English. Same as JAPN 3162.

ANTH 3791. Topics in Regional Anthropology. 3 Credits.

Culture history and ways of life in a selected region of the world. Topic to be announced in the Schedule of Classes. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004. (Spring, even years).

ANTH 3801. African Roots from Australopithecus to Zimbabwe. 3 Credits.

The development and contributions of Africa from human beginnings through medieval states. Topics include human evolution, origins of art, technology, trade, and animal/plant domestication, rise of African states, early relations with Europe and Asia, antecedents of contemporary African diversity. Prerequisite: ANTH 1003 or permission of instructor.

ANTH 3801W. African Roots from Australopithecus to Zimbabwe. 3 Credits.

The development and contributions of Africa from human beginnings through medieval states. Topics include human evolution, origins of art, technology, trade, animal/plant domestication, rise of African states, early relations with Europe and Asia, antecedents of contemporary African diversity. Prerequisites: ANTH 1003. (Spring, even years).

ANTH 3802. Human Cultural Beginnings. 3 Credits.

Survey of prehistory in Europe, Africa, and Asia from the earliest hominid cultures to the beginnings of agriculture. Prerequisite: ANTH 1003.

ANTH 3802W. Human Cultural Beginnings. 3 Credits.

Survey of prehistory in Europe, Africa, and Asia from the earliest hominid cultures to the beginnings of agriculture. Prerequisite: ANTH 1003.

ANTH 3803. Old World Prehistory: First Farmers to First Cities. 3 Credits.

Archaeology of the Near East, Egypt, Europe, and other areas, from the beginnings of agriculture to the rise of Babylon. Prerequisites: ANTH 1003. (Fall, odd years).

ANTH 3803W. Old World Prehistory: First Farmers to First Cities. 3 Credits.

Archaeology of the Near East, Egypt, Europe, and other areas, from the beginnings of agriculture to the rise of Babylon. Prerequisites: ANTH 1003. (Fall, odd years).

ANTH 3804. Origins of the State and Urban Society. 3 Credits.

Emergence of urbanism and the state in the prehistory of different world regions. Prerequisite: ANTH 1003.

ANTH 3805. Archaeology of Israel and Neighboring Lands. 3 Credits.

The archaeology of Israel and adjacent areas (Syria, Jordan, Lebanon). Examination of many major sites and monuments. Significant problems and current debates. Same as AH 3106.

ANTH 3806. Art and Archaeology of the Aegean Bronze Age. 3 Credits.

Excavational and multidisciplinary aspects of classical archaeology. Minoan and Mycenaean civilizations (1700-1200 B.C.) Same as AH 3104.

ANTH 3808. Archaeology and the Celts. 3 Credits.

Historical and archaeological study of the Celtic people.

ANTH 3811. Historical Archaeology. 3 Credits.

Survey of the basic data and methods of research in the material culture of recent history. Same as AmSt 3811. (Spring, alternate years).

ANTH 3812. Power and Violence in the New World. 3 Credits.

The use of power, violence, and resistance in New World societies, examined through archaeological, ethnohistoric, and ethnographic data. Specific topic announced in the Schedule of Classes.

ANTH 3813. Archaeology of North America. 3 Credits.

History of American archaeology; survey of North American culture history from human entry into the Americas during the Pleistocene period until the time of the first European contacts. Focus on peoples north of Mexico. Prerequisite: ANTH 1003.

ANTH 3814. Ancient Mexican Civilizations. 3 Credits.

Culture history of pre-Columbian societies in Middle America; the emergence of Mesoamerican civilization from the earliest hunter-gatherers and first farmers to the Aztec Empire. Prerequisite: ANTH 1003.

ANTH 3821. Myths and Mysteries in Archaeology. 3 Credits.

Topics ranging from King Arthur to Atlantis are used to illustrate how archaeological methods and techniques can falsify-or support-exotic beliefs about the past.

ANTH 3822. Archaeology in Film and Television. 3 Credits.

As visual media increase public awareness of archaeology, misrepresentations and distortions abound. This course examines the relationships among archaeology, the media, and popular culture. Issues considered include nationalism, descendant communities, gender, race, and colonialism.

ANTH 3823. Archaeology of Ritual and Religion. 3 Credits.

Archaeological and ethnographic examples from around the world are used to critically evaluate how archaeologists make inferences about ritual practices and the religious lives of past peoples. Issues include the origins of symbolic behavior, sacred landscapes, shamanism, ancestor veneration, and sorcery/witchcraft.

ANTH 3832. Paleoanthropological Field Program. 3-6 Credits.

Field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Visits to comparative sites and collections in the region.

ANTH 3833. Field Research: New World. 1-6 Credits.

Survey, excavation, and/or laboratory analysis at localities in North or South America. See Schedule of Classes for details.

ANTH 3834. Field Research: Old World. 1-6 Credits.

Survey, excavation, and/or laboratory analysis at Neolithic or later localities in Eurasia, Africa, or Oceania. See Schedule of Classes for details. (Summer).

ANTH 3835. Historical Archaeology Field Program. 3 Credits.

Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as AMST 3835.

ANTH 3838. Theory and Practice in Archaeology. 3 Credits.

The primary literature in archaeology theory since the 1960s. Ethics, topical issues, and archaeological practice. Prerequisite: Anth 1003. (Fall).

ANTH 3838W. Theory and Practice in Archaeology. 3 Credits.

The primary literature in archaeology theory since the 1960s. Ethics, topical issues, and archaeological practice. Prerequisite: ANTH 1003.

ANTH 3839. Lab Research Methods in Archaeology. 3 Credits.

Research methods and techniques used by archaeologists. Emphasis on hands-on experience in one or more techniques. Prerequisite: Anth 1003. (Spring, alternate years).

ANTH 3891. Special Topics in Archaeology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Prerequisite: ANTH 1003 or permission of instructor.

ANTH 3991. Special Topics. 0-3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. (Fall).

ANTH 3991W. Special Topics. 3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 3995. Undergraduate Research. 1-12 Credits.

Individual research problems to be arranged with a member of the faculty. May be repeated for credit. Prerequisite: permission of instructor.

ANTH 4008. Seminar: Contemporary Anthropological Theory. 3 Credits.

The development of major trends in anthropological theory. How anthropologists from the four fields—sociocultural, linguistic, biological, and archaeology—have deployed and developed the ideas of theorists in their own empirical research and theorizing about specific processes. Prerequisite: ANTH 2008.

ANTH 6101. Proseminar in Biological Anthropology. 3 Credits.

Comprehensive overview of theory and practice in biological anthropology. (Fall).

ANTH 6102. Proseminar in Sociocultural Anthropology. 3 Credits.

Comprehensive overview of theory and practice in sociocultural anthropology. (Fall).

ANTH 6103. Proseminar in Archaeology. 3 Credits.

Survey of the most recent archaeological techniques and theoretical approaches to reconstructing and interpreting the cultures of the past. (Spring).

ANTH 6104. Proseminar in Linguistic Anthropology. 3 Credits.

Contemporary anthropological studies of language in biological, social, and historical perspectives. (Spring).

ANTH 6200. Museum Anthropology. 3 Credits.

How anthropological collections take shape in the past and carry meaning in the present. Critical examination of artifacts and forms of documentation. Application of material culture theory to museum records, collected objects, the changing meaning given to objects, and the context of collecting. (Fall, even years).

ANTH 6201. Methods in Museum Anthropology. 3 Credits.

How anthropological collections take shape in the past and carry meaning in the present. Research and analysis of existing collections; issues in museum anthropology. (Spring).

ANTH 6202. Museums and the Public: Exhibiting Culture. 3 Credits.

Study of the issues and problems involved in "exhibiting culture," past and present, including issues of representation, message and interpretation, audience, ownership of objects and symbols, and ways of reconstructing the past. Critical examination of museum exhibits.

ANTH 6203. Preventive Conservation Concepts. 3 Credits.

Historical development of preventive conservation in museums, conservation ethics, team approaches to conservation, interactions of various materials with agents of deterioration. Basics of materials testing, preparation of condition reports, choosing museum storage and exhibition materials, and risk assessment. Same as MSTD 6203/ AH 6286.

ANTH 6204. Preventive Conservation Techniques. 3 Credits.

Practical applications of preventive conservation of materials, monitoring environmental conditions, conducting risk assessments, evaluation of exhibit and storage areas; developing plans, policies, and procedures for collections care; grant proposal preparation for collections care initiatives. Same as MSTD 6204/ AH 6287.

ANTH 6205. Problems in Conservation. 3 Credits.

Individual conservation projects to determine composition, construction, decomposition of materials, and possible stabilization techniques. Conservation laboratory experience. Prerequisite or concurrent registration: Anth 6203/AH 6286.

ANTH 6230. Internship in Museum Anthropology. 1-6 Credits.

Supervised individual research and/or field work at the Smithsonian Institution or other area museums, arranged in consultation with the museum and the Anthropology Department. Admission by arrangement with the department chair or museum training advisor. May be repeated for credit up to a maximum of 6 credits.

ANTH 6301. The Anthropology of Development. 3 Credits.

Theoretical perspectives that distinguish the contribution of anthropology to understanding processes of change in the Third World. Focus on health, population, environment, gender, and tourism issues. The role of anthropology in planning and implementing projects and policy. (Fall).

ANTH 6302. Issues in Development. 3 Credits.

Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6330. Internship in Development Anthropology. 3 Credits.

Supervised participation in a selected development agency or other relevant organization. Opportunity to observe agency procedures and gain practical experience. Admission by permission of instructor or department chair.

ANTH 6331. Research Methods in Development Anthropology. 3 Credits.

Anthropologists' roles in research-related activities, such as feasibility studies, social soundness analysis, and evaluations. Innovative research techniques, such as interactive data gathering, team survey methods, and rapid rural appraisal. Admission by permission of instructor.

ANTH 6391. Anthropology and Contemporary Problems. 3 Credits.

Exploration of anthropological perspectives on a current issue, such as refugees, ethnic violence, national mythologies, and women's health in developing countries. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6401. Human Functional Anatomy. 3 Credits.

Growth and function of the musculoskeletal system, including the development, anatomy, and histology of bone, biomechanics of muscle and skeletal tissue, craniofacial and dental growth and morphology, and locomotion. No prior knowledge of anatomy required. Laboratory fee. (Fall).

ANTH 6404. The Evolution of Primate Life Histories. 3 Credits.

Recent developments in the study of human and non-human life histories. Life history theory. Life history traits compared among primate groups in order to determine how selective pressures have shaped extant primate life history patterns. Laboratory fee.

ANTH 6405. Human Growth and Development. 3 Credits.

Modern human growth and development considered through an evolutionary perspective. The growth stages and life cycles of modern humans, emphasizing physiological and environmental influences and comparisons with extant non-human primates and fossil hominids. Laboratory fee. (Spring, alternate years).

ANTH 6406. Human Genetic Variation. 3 Credits.

The genetic variation in human populations as a framework for measurement and analysis of genetic diversity and evolutionary process. Consideration of the possible roles of cultural change leading to adaptive/selective events. Same as FORS 6246.

ANTH 6412. Paleoanthropology. 1-3 Credits.

Survey of current research in hominid and hominoid evolution, focusing on the integrated nature of the field. Contributions from the geological and biological sciences will be stressed, together with innovative geochemical techniques for establishing chronological sequences. Prerequisite: ANTH 3412 or BISC 2450.

ANTH 6413. Analytical Methods in Human Evolutionary Studies. 3 Credits.

A survey of methods and approaches for data collection and analysis in human evolutionary biology research. Topics include comparative methods and basic and multivariate statistics. (Spring, alternate years).

ANTH 6491. Topics in Biological Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. Instructors will be drawn from GW faculty and Smithsonian Institution staff. May be repeated for credit if topic varies.

ANTH 6501. Gender and Sexuality. 3 Credits.

Study of new theoretical and methodological approaches developed in the anthropology of gender. Topics include postcolonialism, sexuality, and literary representations of gender. Same as WSTU 6257.

ANTH 6505. Medical Anthropology. 3 Credits.

Concepts and theories in contemporary medical anthropology, including "critical" versus "conventional" medical anthropology, changes in approaches since the mid-twentieth century; structural and cultural construction of illness and suffering; ethnographic and epidemiological perspectives.

ANTH 6506. Topics in Medical Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies.

ANTH 6507. Nationalism and Ethnicity. 3 Credits.

Major theoretical and ethnographic issues in the study of nationalism worldwide. Explores how ethnic groups emerge in colonial and contemporary plural societies and how states attempt to integrate ethnic groups into nations.

ANTH 6508. Ethics and Cultural Property. 3 Credits.

Survey of ethical issues in anthropology, focusing on cultural property and repatriation; the epistemological, ethical, and political dilemmas of excavating, collecting, and owning cultural artifacts.

ANTH 6509. Anthropology of Art, Aesthetics, and Symbolism. 3 Credits.

Anthropological approaches to aesthetic problems and theories of symbolism in the context of ethnographic materials. (Fall, alternate years).

ANTH 6531. Methods in Sociocultural Anthropology. 3 Credits.

Epistemology; the definition of research problems; selection of research subjects and sites; techniques of data collection (e.g., surveys, interviews); data management and organization; ethical protocols; issues of safety; grant writing and funding.

ANTH 6561. American Folklife. 3 Credits.

The materials of American folk culture, concentrating on folk architecture, crafts, and art. Major organizing themes are regionalism and the use of objects as indicators of cultural intention. Same as AMST 6561.

ANTH 6562. Folklore Theory. 3 Credits.

An intellectual history of American folklore research; analysis of particular theories and methods. Same as AMST 6562.

ANTH 6591. Topics in Sociocultural Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies.

ANTH 6691. Topics in Linguistic Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies.

ANTH 6702. Issues in Latin American Anthropology. 3 Credits.

Intensive study of a selected topic in the anthropology of Central and/or South America. Topic to be announced.

ANTH 6707. Issues in Middle East Anthropology. 3 Credits.

Selected topics in the anthropology of the Middle East. Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6801. Paleolithic Archaeology. 3 Credits.

Current problems relating to materials from the Old World.

ANTH 6802. Problems in Eurasian and African Archaeology. 3 Credits.

Topic announced in the Schedule of Classes. Topics may include Bronze Age conflict, the Celts, etc. May be repeated for credit.

ANTH 6803. Problems in New World Archaeology. 3 Credits.

Current archaeological problems relating to the origin and development of aboriginal cultures. Specific topic to be announced in the Schedule of Classes. May be repeated for credit.

ANTH 6804. Problems in Mesoamerican Archaeology. 3 Credits.

Topics range from specific civilizations, such as the Olmec, to pan-Mesoamerican topics, such as religion and exchange. May be repeated for credit.

ANTH 6806. Technology. 3 Credits.

Cross-cultural examination of the form, function, meaning, and use of material culture (such as ceramics or stone tools) and the behavior patterns involved in its production. Topic announced in the Schedule of Classes. (Spring, odd years).

ANTH 6807. Public Archaeology. 3 Credits.

The use and creation of the past and the relationship between archaeologists and different publics. (Spring, alternate years).

ANTH 6832. Paleoanthropological Field Program. 3-6 Credits.

Intensive course on field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Visits to comparative sites and collections in the region. (Summer).

ANTH 6835. Historical Archaeology Field Program. 3-6 Credits.

Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as AMST 6835.

ANTH 6838. Archaeological Theory. 3 Credits.

Overview of major theories and positions in American archaeology; examination of new issues and directions in which the field appears to be moving.

ANTH 6839. Lab Research Methods in Archaeology. 3,4 Credits.

Research methods and techniques used by archaeologists. Emphasis on hands-on experience in one or more techniques. Laboratory fee. (Spring, alternate years).

ANTH 6891. Topics in Archaeology. 3 Credits.

Major issues related to the theory and practice of archaeology. Topic announced in the Schedule of Classes.

ANTH 6995. Research. 1-12 Credits.

May be repeated for credit.

ANTH 6998. Thesis Research. 3 Credits.**ANTH 6999. Thesis Research. 3 Credits.****ANTH 8998. Advanced Reading & Research. 1-12 Credits.**

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

ANTH 8999. Dissertation Research. 1-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

APPLIED SCIENCE (APSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

APSC 1001. Introduction to Engineering for Undeclared Majors. 0-1 Credits.

As an introduction to disciplines within SEAS, potential solutions to problems are presented by practitioners of civil and environmental engineering; computer science; electrical, computer, and biomedical engineering; mechanical and aerospace engineering; and systems engineering.

APSC 2057. Analytical Mechanics I. 0-3 Credits.

First half of a one-year sequence. Concepts of statics: force systems, conditions of force and moment equilibrium, simple structures, distributed forces, centroids, internal forces, friction, moments of inertia. Prerequisites: PHYS 1021. (Fall and spring).

APSC 2058. Analytical Mechanics II. 3 Credits.

Second half of a one-year sequence. Concepts of dynamics: kinematics of particles, velocity and acceleration, translating and rotating reference frames, particle dynamics, motion under central and electromagnetic force, effect of Earth's rotation, vibrations, work, kinetic and potential energy, dynamics of systems of particles. Prerequisite: APSC 2057.

APSC 2113. Engineering Analysis I. 3 Credits.

Analytical methods for the solution of problems in engineering, the physical sciences, and applied mathematics: applications of ordinary differential equations, matrices and determinants, eigenvalues and eigenvectors, systems of ordinary linear differential equations, Bessel and Legendre functions. Prerequisite or concurrent registration: MATH 2233.

APSC 2114. Engineering Analysis II. 3 Credits.

Analytical methods for the solution of problems in engineering, the physical sciences, and applied mathematics: complex variables, Fourier series and integral, frequency filters, Laplace transforms, inversion and Duhamel integrals; partial differential equations. Prerequisite: MATH 2233.

APSC 3098. Variable Topics. 1-36 Credits.**APSC 3115. Engineering Analysis III. 3 Credits.**

Analytical methods for the solution of problems in engineering, the physical sciences, and applied mathematics: applications of ordinary differential equations, matrices and determinants, eigenvalues and eigenvectors, systems of ordinary linear differential equations, Bessel and Legendre functions. Prerequisite or concurrent registration: MATH 2233.

APSC 3116. Engineering Analysis IV. 3 Credits.

Analytical methods using advanced concepts from probability and statistics: multivariate distributions, expectation, generating functions, parametric families of distributions, sampling and sufficient statistics, estimation, hypothesis testing, and engineering applications. Prerequisite: APSC 3115, Math 2233. May be taken for graduate credit. (Fall).

APSC 6211. Analytical Methods in Engineering I. 3 Credits.

Engineering applications of the theory of complex variables: contour integration, conformal mapping, inversion integral, and boundary-value problems. Prerequisite: approval of department.

APSC 6212. Analytical Methods in Engineering II. 3 Credits.

Algebraic methods appropriate to the solution of engineering computational problems: linear vector spaces, matrices, systems of linear equations, eigenvalues and eigenvectors, quadratic forms. Prerequisite: approval of department.

APSC 6213. Analytical Methods in Engineering III. 3 Credits.

Analytical techniques for solution of boundary-initial-value problems in engineering: wave propagation, diffusion processes, and potential distributions. Prerequisite: approval of department.

APSC 6214. Analytical Methods in Engineering IV. 3 Credits.

Introduction to variational methods in engineering: Ritz and Galerkin approximation methods of boundary-value problems, aspects of linear integral equations arising from engineering analysis. Prerequisite: approval of department.

APSC 6215. Analytical Methods in Engineering V. 3 Credits.

Advanced methods of solution of boundary-initial-value problems in engineering: characteristics, wave propagation, and Green's functions. Prerequisite: APSC 6213.

APSC 6216. Special Topics in Engineering Analysis. 3 Credits.

Selected topics, such as perturbation techniques applied to approximate solution of nonlinear boundary and initial-value problems in engineering; application of singular integral equations in problems of mechanics. Prerequisite: approval of department.

ARABIC (ARAB)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ARAB 1001. Beginning Arabic I. 4 Credits.**ARAB 1002. Beginning Arabic II. 4 Credits.**

Continuation of ARAB 1001. Fundamentals of speaking, understanding, reading, and writing of Modern Standard Arabic. Laboratory fee.

ARAB 1201. Intensive Elementary Arabic I-II. 6 Credits.

Fundamentals of speaking, understanding, reading, and writing of Modern Arabic. Laboratory fee.

ARAB 1202. Intensive Elementary Arabic I-II. 6 Credits.

Continuation of ARAB 1201. Fundamentals of speaking, understanding, reading, and writing of Modern Arabic. Prerequisite: ARAB 1201. Laboratory fee.

ARAB 2001. Intermediate Arabic I. 4 Credits.

Continuation of ARAB 1002. Further development of speaking, understanding, reading, and writing skills of Modern Standard Arabic. Prerequisite: ARAB 1002. Laboratory fee.

ARAB 2002. Intermediate Arabic II. 4 Credits.

Continuation of ARAB 2001. Further development of speaking, understanding, reading, and writing skills of Modern Standard Arabic. Prerequisite: ARAB 2001. Laboratory fee.

ARAB 2201. Intensive Intermediate Arabic I. 6 Credits.

Continuation of ARAB 1202. Prerequisite: ARAB 1202. Laboratory fee.

ARAB 3001. Advanced Arabic. 4 Credits.

Emphasis on development of speaking skills at the advanced level of proficiency. Discussion of cultural and social issues based on a selection of contemporary written and audiovisual materials from Arab media sources. Prerequisite: ARAB 2002 or permission of instructor. Laboratory fee.

ARAB 3105. Special Topics. 3 Credits.

Topic announced in the Schedule of Classes may be repeated for credit provided the topic differs.

ARAB 3201. Intensive Intermediate Arabic II. 6 Credits.

Continuation of ARAB 2201. Prerequisite: ARAB 2201. Laboratory fee.

ARAB 3301. Modern Arabic Literature. 3 Credits.

Short stories, short plays, poems, formal speeches, and panel discussions in Modern Standard Arabic, with attention to linguistic and stylistic aspects. Prerequisite: ARAB 3001 and permission of instructor.

ARAB 3302. Media Arabic. 4 Credits.

Authentic scripted and audiovisual materials from various contemporary Arab media outlets including television and radio newscast and cultural programs; newspaper and magazine articles; films and documentaries; and the Internet. Prerequisite: ARAB 3001 or ARAB 3301 or permission of instructor.

ARAB 3311. Business Arabic. 3 Credits.

General and specific business language skills used in a variety of business operations and settings, such as making presentations, researching opportunities, conducting interviews, and negotiating. Prerequisite: ARAB 3001.

ARAB 3501. Arabic and Arab Identity. 3 Credits.

History of the Arabic language from pre-Islamic times and its subsequent spread into contiguous regions. The role of the Arabic language in formulating the ideology of Arab nationalism and identity. Course is conducted in English.

ARAB 3502. Arab Film & Culture in English. 3 Credits.

Historical survey of Arab cinema and its expression of Arab culture. Course is conducted in English.

ARAB 3503. Fundamentals of Arabic Linguistics. 3 Credits.

Introduction to the structures, functions, and varieties of Arabic from a descriptive linguistics perspective. The history of the language, including contributions of major medieval Arabic grammarians. Analysis of standard and dialectal varieties of Arabic. Course is conducted in English.

ARAB 4001. Genres in Modern Arabic Literature. 3 Credits.

Historical development of short Arabic stories or short Arabic plays throughout the twentieth century. Prerequisite: ARAB 3301 or permission of instructor.

ARAB 4002. Arabic Narratives Through the Ages. 3 Credits.

Reading and discussion of narratives, such as those found in stories of The Thousand and One Nights, or travel adventures, such as those of Ibn Battuta and his successors. Prerequisite: ARAB 3301 or permission of instructor.

ARAB 4501. Arabic-English Translation. 3 Credits.

Theoretical background and practical applications of translation strategies from Arabic to English that are necessary for professional translation tasks. Prerequisite: ARAB 3301 or ARAB 3302.

ARAB 4502. Arabic-English Advanced Translation and Editing. 1-3 Credits.

The professional translation and editing of various types of material. Prerequisite: ARAB 4501.

ART HISTORY (AH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

AH 1000. Dean's Seminar. 3 Credits.**AH 1001. Summer Art History. 2 Credits.****AH 1031. Survey of Western Art I. 0-3 Credits.**

An introduction to the history of art through the study of major monuments, movements, and concepts. From the prehistoric period, through the Ancient Mediterranean cultures, including Greece and Rome, to the end of the Middle Ages.

AH 1032. Survey of Western Art II. 0-3 Credits.

Continuation of AH 1031. An introduction to the history of art through the study of major monuments, movements, and concepts. From the early Renaissance through the Baroque and modern eras.

AH 1070. The American Cinema. 3 Credits.

History and criticism of American films. The course enables the student to recognize and evaluate cinema techniques, to express the evaluation clearly in writing, and to understand the role of films in the context of American culture. Laboratory fee. Same as AMST 1070.

AH 1135. Spanish Art: Prado/Thyssen Museums. 3 Credits.**AH 1136. Spanish Art: From Goya to Picasso. 3 Credits.****AH 2071. Introduction to the Arts in America. 3 Credits.**

A survey of American art from the period of colonial exploration and settlement to the postmodern present. Political and social meanings of painting, sculpture, architecture, prints, and photographs. The relationship of art to religion and nationalism; issues of class, race, and gender. Same as AMST 2071.

AH 2109. Sem: Ancient Art & Architecture. 3 Credits.

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 2109W. European Art: Early 19th Cent. 3 Credits.**AH 2110W. European Art: Late 19th Cent. 3 Credits.****AH 2117W. Medieval Art I. 3 Credits.****AH 2135W. Span&Port Art: 17th-18th Cent. 3 Credits.****AH 2143W. European Art: Early 20th Cent. 3 Credits.****AH 2145. History of Decorative Arts: European Heritage. 3 Credits.**

Changing styles of European furniture, textiles, ceramics, and glass in the context of general trends in art history and changing patterns in economic, technological, social, and cultural history. From antiquity to the modern age.

AH 2146W. Mod Arch Eur & Amer 1750-2000. 3 Credits.**AH 2154. American Architecture I. 3 Credits.**

Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning. Buildings are analyzed both as artifacts and as signifiers of social, cultural, and economic tendencies. 1600-1860. Same as AMST 2520.

AH 2155. American Architecture II. 3 Credits.

Continuation of AH 2154. Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning. Buildings are analyzed both as artifacts and as signifiers of social, cultural, and economic tendencies. 1860-present. Same as AMST 2521.

AH 2161. History of Decorative Arts: American Heritage. 3 Credits.

The decorative arts in America from the 17th century to the modern period. Consideration of changing visual characteristics in relation to the changing American experience.

AH 2162. History of Photography. 3 Credits.

The historical, social, aesthetic and technological developments of the photographic medium, including its relationship to modern art and modes of visual representation and the properties that inform our understanding of photographic meaning.

AH 2162W. History of Photography. 3 Credits.

The historical, social, aesthetic and technological developments of the photographic medium, including its relationship to modern art and modes of visual representation and the properties that inform our understanding of photographic meaning.

AH 2165. Modernist and Postmodernist Art and Theory. 3 Credits.

Artists, art forms, and critical concepts from the 1960s to the present, focusing on modernist theory and the development of postmodernist art and thought. Prerequisite: AH 2143 or AH 2153.

AH 2190. East Asian Art. 3 Credits.

Survey of the arts of China, Japan, and Korea.

AH 2191. South Asian Art. 3 Credits.

Survey of the arts of India, Pakistan, Sri Lanka, Nepal, and Tibet, from prehistoric times to circa 18th century.

AH 2192. The Art of Southeast Asia. 3 Credits.

The arts of Southeast Asia—Vietnam, Laos, Cambodia, Myanmar (former Burma), Thailand, and Indonesia, especially Java and Bali. The fusion of Indian and Chinese concepts with indigenous cultural traits.

AH 3101. Ancient Art of the Bronze Age and Greece. 3 Credits.

A survey of Greek art from the Minoans and Mycenaeans (c. 2000 B.C.) to the age of Alexander (c. 300 B.C.). Relationships among the arts of the different groups in the Aegean area and their impact on Western culture. The Thera volcanic eruption, the "Dorian Invasion," the portrayal of women, "heroic nudity," and the assumption of a stylistic chronology.

AH 3102. Ancient Art of the Roman Empire. 3 Credits.

A survey of Roman art from the successors of Alexander the Great (c. 300 B.C.) to the fall of the Roman Empire in the West (c. 300 A.D.). The impact of the Greek world on Roman art and culture; innovations and achievements of the Romans in architecture, portraiture, and historical narrative. Focus on the city of Rome and other areas of the Roman world such as North Africa and Asia.

AH 3103. Art and Archaeology of Egypt and the Near East. 3 Credits.

The great artistic tradition of the Nile Valley and the contemporary civilizations (c. 3000 B.C. to after 1000 B.C.) between the rivers Tigris and Euphrates (present day Iraq). The Pyramid Age, the temples at Karnak and Luxor, the tombs of the Valley of the Kings, and the artistic traditions of the Sumerians, Akkadians, Babylonians, Assyrians, and Persians.

AH 3104. Art and Archaeology of the Aegean Bronze Age. 3 Credits.

Excavational and multidisciplinary aspects of classical archaeology. Minoan and Mycenaean civilizations (1700-1200 B.C.). Same as ANTH 3806.

AH 3105. Topics in Ancient Art and Archaeology. 3 Credits.

May be repeated for credit provided the topic differs. Same as CLAS 3115.

AH 3106. Art and Archaeology of Israel and Neighboring Lands. 3 Credits.

The archaeology of Israel and adjacent areas (Syria, Jordan, Lebanon). Examination of many major sites and monuments. Significant problems and current debates. Same as ANTH 3805.

AH 3111. Early Christian and Byzantine Art and Architecture. 3 Credits.

Art of the Mediterranean world following the collapse of Roman administration. Growth of the basilica and its decoration; the significance of small objects in medieval study. The rise and fall of the East Roman (Byzantine) Empire from Justinian to 1453.

AH 3112. Romanesque and Gothic Art and Architecture. 3 Credits.

The origin of Western art in the Hiberno-Saxon and Carolingian worlds, their relationship to the Ancient heritage and to the contemporary Byzantine art. Romanesque and Gothic architecture and its sculptural decoration as art historical and social phenomena.

AH 3113. Islamic Art and Arch. 3 Credits.

This course serves as an introduction to the visual culture of the Muslim world, from Spain to India, from the 7th century to the present. We examine artworks in their historical, religious, and cultural contexts, and introduce key points in the field's historiography.

AH 3120. Italian Art and Architecture of the 13th through 15th Centuries. 3 Credits.

Origins, development, and theoretical foundations of Renaissance painting, sculpture, and architecture (Giotto, Duccio, Masaccio, Donatello, Ghiberti, Brunelleschi, Mantegna, Bellini, Botticelli).

AH 3121. Italian Art and Architecture of the 16th Century. 3 Credits.

The development of the universal genius within the circle of Florence and Rome (Leonardo, Raphael, Michelangelo) and their counterparts in Venice (Giorgione, Titian, Tintoretto, Sansovino, Palladio).

AH 3122. Topics in Early Northern Renaissance Art and Architecture. 3 Credits.

Royal and ducal patronage and the Flemish and French masters of the 15th century, including van Eyck, Campin, van der Weyden, Fouquet, van der Goes, Memling, and Gerard David. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3122W. Topics in Early Northern Renaissance Art and Architecture. 3 Credits.

AH 3123. Topics in Northern Renaissance Art and Architecture. 3 Credits.

Francis I and Fontainebleau Palace, Henry VIII and Hampton Court, Johann Friedrich of Saxony, and the Holy Roman Emperors Maximilian I and Charles V. François Clouet, Hans Holbein, Lucas Cranach, Albrecht Dürer, Pieter Brueghel, Bernard van Orley, and others. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3123W. Topics in Northern Renaissance Art and Architecture. 3 Credits.

AH 3131. Italian Art and Architecture of the 17th Century. 3 Credits.

The Counter-Reformation and creation of the Baroque in painting, sculpture, and architecture in Rome (Carracci, Caravaggio, Bernini, Borromini, Pietro da Cortona), Turin (Guarini, Juvarra), and Venice (Longhena).

AH 3132. Topics in Northern European Art and Architecture of the 17th Century. 3 Credits.

Hapsburg Flanders and Brussels under the Spanish archdukes and their patronage of Rubens and his circle. The role of Dutch merchants commissioning secular themes in Utrecht, Haarlem, Delft, Leyden, and Amsterdam from Golden Age artists such as Rembrandt, Vermeer, and Hals. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3134. Topics in Spanish and Portuguese Art through the 16th Century. 3 Credits.

The Kingdoms of the Iberian Peninsula from the Reconquest of Granada to the Renaissance Age of Exploration. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3134W. Topics in Spanish and Portuguese Art through the 16th Century. 3 Credits.

The Kingdoms of the Iberian Peninsula from the Reconquest of Granada to the Renaissance Age of Exploration. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. (Same as AH 3134) (Fall, spring, and summer).

AH 3135. Topics in 17th/18th Century Spanish and Portuguese Art. 3 Credits.

Secular and sacred art of the Baroque Golden Century or the Rococo Enlightenment. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3140. European Art of the 18th Century. 3 Credits.

Painting, sculpture, and architecture in France, Great Britain, and Italy. Emphasis on Watteau, Chardin, David, Hogarth, Gainsborough, Reynolds, Canaletto, and Tiepolo. Painting, sculpture, and architecture in France, Great Britain, and Italy.

AH 3141. European Art of the Early 19th Century. 3 Credits.

Neoclassicism and Romanticism in the context of Western European political, social, and cultural developments. Emphasis on France, England, and Germany and the representative styles of David, Ingres, Delacroix, Turner, Constable, and Friedrich.

AH 3141W. European Art of the Early 19th Century. 3 Credits.

Neoclassicism and Romanticism in the context of Western European political, social, and cultural developments. Emphasis on France, England, and Germany and the representative styles of David, Ingres, Delacroix, Turner, Constable, and Friedrich.

AH 3142. European Art of the Late 19th Century. 3 Credits.

The revolution in style of Realism, Impressionism, and Post-Impressionism in the context of Western European political, social, and cultural developments. Emphasis on representative styles of Courbet, Manet, Monet, Morisot, Repin, Seurat, Cezanne, Van Gogh, and Gauguin.

AH 3142W. European Art of the Late 19th Century. 3 Credits.

AH 3143. European Art of the Early 20th Century. 3 Credits.

20th-century European painting, sculpture, and architecture, from their origins in the late 19th century through Surrealism. Emphasis on theory. The work of artists such as Matisse, Picasso, Kandinsky, Duchamp, and Mondrian. Prerequisite: AH 1032 or AH 2142.

AH 3146. Modern Architecture in Europe and America. 3 Credits.

Major developments in architecture and urbanism from the Industrial Revolution to the end of the 20th century.

AH 3146W. Modern Architecture in Europe and America. 3 Credits.

AH 3151. American Art in the Age of Revolution. 3 Credits.

American art during the 18th-century "consumer revolution," the American War for Independence, and the early republic. Emphasis on the socioeconomic and political purposes of art, with focus on Enlightenment symbolism and the visualization of national identity. Same as AMST 3151. Prerequisite: AH 1032 or AH 1071.

AH 3152. American Art in the Era of National Expansion. 3 Credits.

American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. Emphasis on the role of art in the expansion of the United States, exploring issues of race, class, and gender; art and religion. Same as AMST 3152. Prerequisite: AH 1032 or AH 1071.

AH 3153. American Art of the 20th Century. 3 Credits.

20th-century American painting and sculpture from the turn of the century to the beginnings of postmodernism, with focus on the avant garde. Artists of the Stieglitz circle and later modernist movements such as Abstract Expressionism, Pop, Op, Minimal, and Conceptual art. Theory and criticism. Prerequisite: AH 2142 or AH 2143.

AH 3160. Latin American Art and Architecture. 3 Credits.

AH 3165. Modernist and Postmodernist Art and Theory. 3 Credits.

Artists, art forms, and critical concepts from the 1960s to the present, focusing on modernist theory and the development of postmodernist art and thought. Prerequisite: AH 2143 or 2153.

AH 3170. Materials, Methods, and Techniques in Art History. 3 Credits.

Working hands-on in a workshop studio, students create panels, canvases, vehicles, mediums, pigments, drawings, and paintings from raw materials and are introduced to the materials, methods, and techniques of the fine arts through traditional practices and processes of manufacture in western cultures. Prerequisites: AH 1031 or AH 1032. (Fall and spring).

AH 4119. Seminar in Medieval Art and Architecture. 3 Credits.

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4129. Seminar in Renaissance Art and Architecture. 3 Credits.

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4139. Seminar in Baroque Art and Architecture. 3 Credits.

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4149. Seminar in Modern European Art and Architecture. 3 Credits.

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4159. Seminar in American Art and Architecture. 3 Credits.

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4159W. Seminar in American Art and Architecture. 3 Credits.

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4189. Seminar: Special Topics in Art History. 3 Credits.

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs. (Fall and spring).

AH 4198. Independent Study. 1-3 Credits.

Directed research and study in a specific area of art history to be approved by a faculty member. May be repeated for credit.

AH 4199. Internship in Art History. 3 Credits.

Open to candidates for the B.A. in art history only and with the approval of advisor in art history. May not be repeated for credit toward the degree. May be taken P/NP only.

AH 6201. Proseminar in Ancient Art of the Bronze Age and Greece. 3 Credits.

Greek art from the Minoans and Mycenaeans (c. 2000 B.C.) to the age of Alexander (c. 300 B.C.). Relationships among the arts of the different groups in the Aegean area and their impact on Western culture. The Thera volcanic eruption, the "Dorian Invasion," the portrayal of women, "heroic nudity," and the assumption of a stylistic chronology.

AH 6202. Proseminar in Ancient Art of the Roman Empire. 3 Credits.

Roman art from the successors of Alexander the Great (c. 300 B.C.) to the fall of the Roman Empire in the West (c. 300 A.D.). The impact of the Greek world on Roman art and culture; innovations and achievements of the Romans in architecture, portraiture, and historical narrative. Focus on the city of Rome and other areas of the Roman world such as North Africa and Asia.

AH 6205. Ancient Art Seminar. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6211. Proseminar in Early Christian and Byzantine Art and Architecture. 3 Credits.

Art of the Mediterranean world following the collapse of Roman administration. Growth of the basilica and its decoration; the significance of small objects in medieval study. The rise and fall of the East Roman (Byzantine) Empire from Justinian to 1453.

AH 6212. Proseminar in Romanesque and Gothic Art and Architecture. 3 Credits.

The origin of Western art from the Hiberno-Saxon and Carolingian worlds and their relationship to the Ancient heritage. Romanesque and Gothic architecture and its sculptural decoration as social phenomena.

AH 6215. Prosem:Medieval Art/Archaeology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6220. Proseminar in Italian Art and Architecture of the 13th through 15th Centuries. 3 Credits.

Origins, development, and theoretical foundations of Renaissance painting, sculpture, and architecture (Giotto, Duccio, Masaccio, Donatello, Ghiberti, Brunelleschi, Mantegna, Bellini, Botticelli).

AH 6221. Prosem:Ital Art&Arch 16th Cent. 3 Credits.

The development of the universal genius within the circle of Florence and Rome (Leonardo, Raphael, Michelangelo) and their counterparts in Venice (Giorgione, Titian, Tintoretto, Sansovino, Palladio).

AH 6222. Proseminar in Early Northern Renaissance Art and Architecture. 3 Credits.

Royal and ducal patronage and the Flemish and French masters of the 15th century, including van Eyck, Campin, van der Weyden, Fouquet, van der Goes, Memling, and Gerard David. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6223. Proseminar in Northern Renaissance Art and Architecture. 3 Credits.

Francis I and Fontainebleau Palace, Henry VIII and Hampton Court, Johann Friedrich of Saxony, and the Holy Roman Emperors Maximilian I and Charles V. François Clouet, Hans Holbein, Lucas Cranach, Albrecht Dürer, Pieter Brueghel, Bernard van Orley, and others.

AH 6225. Seminar in Renaissance Art. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6231. Proseminar in Italian Art and Architecture of the 17th Century. 3 Credits.

The Counter-Reformation and creation of the Baroque in painting, sculpture, and architecture in Rome (Carracci, Caravaggio, Bernini, Borromini, Pietro da Cortona), Turin (Guarini, Juvarra), and Venice (Longhena).

AH 6232. Proseminar in Northern European Art and Architecture of the 17th Century. 3 Credits.

Hapsburg Flanders and Brussels under the Spanish archdukes and their patronage of Rubens and his circle. The role of Dutch merchants commissioning diverse secular themes in Utrecht, Haarlem, Delft, Leyden, and Amsterdam from "Golden Age" artists such as Rembrandt, Vermeer, and Hals. Specific topic announced in the Schedule of Classes.

AH 6234. Proseminar in Spanish and Portuguese Art through the 16th Century. 3 Credits.

The Kingdoms of the Iberian Peninsula from the Reconquest of Granada to the Renaissance Age of Exploration. Specific topic announced in the Schedule of Classes.

AH 6235. Seminar in Baroque Art. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6240. Proseminar in European Art of the 18th Century. 3 Credits.

Painting, sculpture, and architecture in France, Great Britain, and Italy. Emphasis on Watteau, Chardin, David, Hogarth, Gainsborough, Reynolds, Canaletto, and Tiepolo.

AH 6245. Seminar in European Art of the 19th Century. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6246. Proseminar in Modern Architecture in Europe and America. 3 Credits.

Major developments in architecture and urbanism from the Industrial Revolution to the end of the 20th century.

AH 6250. Seminar: Modern Art. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6251. Proseminar in American Art in the Age of Revolution. 3 Credits.

American art during the 18th-century "consumer revolution," the American War for Independence, and the early republic. Emphasis on the socioeconomic and political purposes of art, with focus on Enlightenment symbolism and the visualization of national identity.

AH 6252. Proseminar in American Art in the Era of National Expansion. 3 Credits.

American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. Emphasis on the role of art in the expansion of the United States, exploring issues of race, class, and gender; art and religion.

AH 6254. Seminar in American Art before 1900. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as AMST 6254.

AH 6255. Seminar: Studies in American Art and History. 3 Credits.

Selected problems and themes in American cultural history involving the use of artistic materials in different media; emphasis on methodology and analytic techniques. May be repeated for credit. Same as AMST 6730.

AH 6256. Seminar in American Art of the 20th Century. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6257. Seminar in Photography. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6258. Art Historiography. 3 Credits.

The development of art history as a discipline from the eighteenth century to the present. An investigation of different art historical methodologies, including formal analysis, iconological, feminist, Marxist, semiotic and deconstructivist approaches.

AH 6265. Seminar in Islamic Art and Architecture. 3 Credits.

Topic announced in Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6270. Special Topics in Art History. 3 Credits.

AH 6286. Preventive Conservation Concepts. 3 Credits.

Historical development of preventive conservation in museums, conservation ethics, team approaches to conservation, interactions of various materials with agents of deterioration. Basics of materials testing, preparation of condition reports, choosing museum storage and exhibition materials, and risk assessment. Same as ANTH 6203/ MSTD 6203.

AH 6287. Preventive Conservation Techniques. 3 Credits.

Practical applications of preventive conservation of materials, monitoring environmental conditions, conducting risk assessments, evaluation of exhibit and storage areas; developing plans, policies, and procedures for collections care; grant proposal preparation for collections care initiatives. Same as ANTH 6204/ MSTD 6204.

AH 6298. Independent Research in Art History. 3 Credits.**AH 6299. Museum Internship. 3-12 Credits.**

ART THERAPY (ARTH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ARTH 6201. Survey of Art Therapy. 3 Credits.**ARTH 6205. History and Theory of Art Therapy. 2 Credits.**

Art therapy history and theory, milestones and practitioners. The development of art therapy as a distinct therapeutic practice. Overview of psychotherapy theories relevant to art therapy. Open only to art therapy students.

ARTH 6206. Human Development and Art Therapy. 3 Credits.

Psychological and artistic development across the life span. Theories of personality development; cultural and environmental influences. Human behavior, including developmental crises, disability, exceptional behavior, and addictive behavior. (Spring).

ARTH 6210. Counseling/Art Therapy Process. 3 Credits.

Theoretical and clinical dimensions of counseling and art therapy explored through study of current research concerning the diverse elements affecting the therapeutic process. The goals of each phase of treatment; development of the therapeutic alliance; assessment of client readiness; therapeutic techniques and interventions as practiced in short- and long-term treatment. (Fall).

ARTH 6211. Counseling/Art Therapy Theory. 3 Credits.

Overview of major theories in counseling and psychotherapy in light of the creative process and other aspects of the clinical practice of art therapy. Client art and art-making, and the therapeutic encounter and treatment, as influenced by attachment, trauma, psychoneurobiology, and multicultural issues. Prerequisite: ARTH 6210.

ARTH 6221. Studio/Technique of Art Therapy. 3 Credits.

Direct experience of the therapeutic utility and psychological influence of art processes and materials. Identifying the effect of art-making leading to assessment and intervention strategies. Open only to art therapy students.

ARTH 6231. Child Art Therapy. 2 Credits.

Practical, theoretical, and ethical considerations involved in treating children in clinical and educational settings. Application of art therapy and counseling principles and practice for diverse child populations. Development of interventions for varied DSM-IV diagnoses. (Spring).

ARTH 6232. Art Therapy with Adolescents. 2 Credits.

Practical, theoretical, and ethical considerations involved in treating adolescents in clinical and educational settings. Assessment and treatment issues integrating the use of art techniques specifically designed for this population. Application of art therapy and counseling principles and practice for diverse adolescent populations. Development of interventions for varied DSM-IV diagnoses. (Spring).

ARTH 6233. Marital and Family Art Therapy/Counseling. 3 Credits.

Principles of work with couples and families, including an overview of systems theories and stages of family life cycle development. The use of art techniques for evaluation of family dynamics. Videotaped observation of family art evaluations in clinical settings. Intervention strategies address cultural issues and ethical considerations. (Fall).

ARTH 6234. Group Process. 3 Credits.

Theoretical and experiential understanding of group art therapy and counseling methods and skills. Principles of group dynamics, therapeutic factors, member roles and behaviors, leadership styles and approaches, selection criteria, and short- and long-term group process. (Summer).

ARTH 6235. Social and Cultural Diversity. 3 Credits.

Consideration of stereotypes and biases that interfere with effective treatment of patients who are racially, ethnically, and otherwise diverse. The role of the art therapist in conflict resolution, advocacy, and social justice. Exploration of the therapist's heritage, expectations, and values. Racial identity development; skills for multicultural counseling. (Summer).

ARTH 6241. Assessment Procedures. 3 Credits.

Instruments and procedures used in assessment of psychological health and psychopathology as manifested in artwork and art-making. Statistical concepts, including reliability and validity; selection and administration of the assessment tool; effects of developmental level and cultural factors; documentation of the assessment; and formulation of treatment goals. (Spring).

ARTH 6242. Psychopathology/Art and Diagnosis. 3 Credits.

Criteria of psychiatric diagnoses, such as the Diagnostic and Statistical Manual multiaxial system, theories of psychopathology, and relevant literature. Evaluation of potential indicators of functional and organic disorders in behavior and artwork of clients. Ethical issues; cultural and environmental influences on diagnostic categorization. Basic introduction to psychopharmacology. (Fall).

ARTH 6251. Research Methods. 3 Credits.

Planning, conducting, and evaluating relevant methodologies, including qualitative and quantitative approaches and basic statistics. The importance of research in the psychotherapy professions; ethical and legal considerations; and the use of research to assess effectiveness of mental health and art therapy services. (Fall).

ARTH 6261. Ethics and Professionalism. 3 Credits.

Professional identity and role of the art therapist; the ethical practice of art therapy, including familiarity with ethical standards of AATA and ATCB as well as ACA and related fields; credentialing and licensure; public policy and advocacy for patients and for the profession. (Spring).

ARTH 6265. Advanced Issues in Psychotherapy and Art Therapy. 1-3 Credits.

Overview and application of one or more treatment models or theories to various mental and emotional disorders. Connections between the practice of art therapy and the techniques of other disciplines.

ARTH 6271. Art Psychotherapy and Trauma I: Theory and Approaches to Treatment. 0-3 Credits.

The etiology of trauma-related disorders, with conceptualization of symptoms as responses to overwhelming stress. The psychobiology of traumatic stress. How traumatic stress (physical or sexual abuse, severe neglect, rape, terrorism, natural disaster) affects the psyche. Neurophysiological research on trauma and the unique way traumatic memories are stored in the brain. (Fall).

ARTH 6272. Art Psychotherapy and Trauma II: Loss, Countertransference, and Resiliency. 0-3 Credits.

The multimodal treatment of acute, serial, or complex trauma-related disorders, including psychodynamic, intensive short-term dynamic, cognitive behavioral, eye movement desensitization and reprocessing, somatic, and narrative and art-based approaches. Clinical opportunities for supervised treatment or observation of treatment of clients with trauma histories. (Spring).

ARTH 6281. Practicum in Art Therapy. 1-2 Credits.

A total of 900 hours of clinical fieldwork in a professional setting. Supervised clinical experience with clients or patients in psychiatric, rehabilitation, and education settings with children, adolescents, and adults. On-site individual supervision by clinical instructors; on-campus group supervision by faculty. Open only to art therapy students.

ARTH 6292. Special Projects in Art Therapy. 1-12 Credits.

Individual work based on research. Empirical, clinical, and library research may be undertaken, as well as the development of new procedures. Details to be worked out with each student. May be repeated for credit with advisor's approval. Open only to art therapy students.

ARTH 6998. Thesis Research. 3 Credits.**ARTH 6999. Thesis Research. 3 Credits.**

ASTRONOMY (ASTR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ASTR 1000. Dean's Seminar. 3 Credits.**ASTR 1001. Stars, Planets, and Life in the Universe. 4 Credits.**

Primarily for non-science majors. An introduction to how our Universe is structured, including the basic principles underlying astronomical systems and observations. Topics include the known laws of nature, stars, and planetary systems and the conditions for extraterrestrial life and exploration. Prerequisite: high school algebra. Laboratory fee.

ASTR 1002. Origins of the Cosmos. 4 Credits.

Primarily for non-science majors. A description of the Universe, its origins and its evolution, based on known physical principles. Topics include galactic and stellar structure, black holes, origin of the elements, and big bang cosmology. Prerequisite: high school algebra. Laboratory fee.

ASTR 1003. Introduction to Astronomy. 2 Credits.**ASTR 1004. Introduction to Astronomy. 2 Credits.****ASTR 2161. Space Astrophysics. 3 Credits.**

Physical processes of celestial phenomena as determined from space-based instrumentation. While the entire electromagnetic spectrum is covered, the high-energy (X-ray and gamma ray) region is emphasized. Results from ground-based instrumentation (e.g., radio and optical) may be introduced. Prerequisite: PHYS 1022.

ASTR 2183. General Relativity. 3 Credits.

A presentation of Einstein's general theory of relativity. Topics include the special theory of relativity, the nature of space and time, the equivalence principle, Riemannian geometry, Einstein's proposal, tests of the theory, Schwarzschild and Kerr solutions, Hawking radiation, and cosmological models. Prerequisite: PHYS 1023; MATH 2233.

ASTR 4195. Undergraduate Research in Astrophysics. 3 Credits.

Research on problems in astrophysics approved by the faculty. May be repeated once for credit.

BIOCHEMISTRY (BIOC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BIOC 3261. Introductory Medical Biochemistry. 4 Credits.

Introduction to structures of biological macromolecules, enzyme catalysis, cellular bioenergetics, and metabolism. Same as BISC 3261. Prerequisite: CHEM 2151–CHEM 2152. Credit toward the degree cannot be earned for this course and for CHEM 3165.

BIOC 3262. Biochemistry Laboratory. 2 Credits.

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Same as BISC 3262/ CHEM 3262. Prerequisite: BIOC 3261/ BISC 3261. Laboratory fee.

BIOC 3263. Special Topics in Biochemistry. 2 Credits.

In-depth discussion of current biochemically relevant topics, including cancer and HIV chemotherapy, immune response, photosynthesis, signal transduction, hormone regulation and nutrition. Same as BISC 3263. Prerequisite: BIOC 3261/ BISC 3261. Credit toward the degree cannot be earned for this course and for CHEM 3166.

BIOC 3263W. Special Topics in Biochemistry. 2 Credits.**BIOC 3560. Diet, Health, and Longevity. 3 Credits.**

Biochemical and molecular explanations of how calorie intake affects health; scientific principles of dieting. Prerequisite: BIOC 3261 or BISC 1005 or EXSC 2114 or EXSC 2119.

BIOC 3564. Lipid Biotechnology. 0-2 Credits.

Same as BISC 3564/ CHEM 3564. Prerequisite: BIOC 3261/ BISC 3261. Laboratory fee.

BIOC 3820. Bioinformatics and Computational Biochemistry. 2 Credits.

How biomedical researchers integrate information from molecular biology resources for analysis and testing of hypotheses. Prerequisite: BISC 1111; STAT 1127.

BIOC 3821. Projects in Biomed Informatics. 1-2 Credits.**BIOC 4195. Undergraduate Research. 1 Credit.**

Research conducted under a mentor who is a member of the department. May be repeated for credit (only 1 credit may count toward the minor). Prerequisites: permission of the faculty member concerned. (Spring).

BIOC 4701. Science and Medicine. 0-4 Credits.

A broad overview of several biomedical discoveries made in the 20th century and the often profound influence they have had on medical technology and on new directions in science and medicine, science administration, politics, ethics, and philosophy. (Same as HONR 2175, HONR 2175) (Fall and spring).

BIOC 6201. Medical Biochemistry. 7 Credits.

Required for medical students. Lecture and laboratory; emphasis on basic principles and their relation to medicine.

BIOC 6209. Resch Elective in Medical BioC. 1-12 Credits.**BIOC 6211. Biochem-Health Sci Students. 3,4 Credits.**

Basic concepts of biochemistry and their relation to health sciences.

BIOC 6221. Proteins, Pathways, and Human Health. 4 Credits.

A comprehensive course in general biochemistry for graduate students in biomedical sciences. Prerequisite: CHEM 2152, CHEM 2154.

BIOC 6222. Biochemical Genetics and Medicine. 3 Credits.

Continuation of BIOC 6221. A comprehensive course in general biochemistry for graduate students in biomedical sciences. Prerequisite: CHEM 2152, CHEM 2154.

BIOC 6223. Bioinformatics. 2 Credits.

The application of bioinformatics concepts and methods through the use of molecular biology databases and tools, covering molecular evolution, and protein sequence, structural, functional analysis. Recommended background: One undergraduate biochemistry course. (Fall).

BIOC 6224. Molec biol and protein methods. 3 Credits.

Common laboratory techniques used in life science laboratories to separate and characterize proteins, including chromatography, gel electrophoresis, immunoassays, spectroscopy, and centrifugation. Corequisite: BIOC 6221. Laboratory fee.

BIOC 6227. Biochemistry Seminar. 1 Credit.

Current literature in biochemistry. Limited to graduate students in the department. May be repeated for credit.

BIOC 6234. Biochemical and Bioinformatic Approaches to Protein Structure and Function. 3 Credits.

Molecular biological, biophysical, chemical, and bioinformatic approaches to understanding protein structure and function. Protein folding, interactions, and ligand binding.

BIOC 6235. Seminar in Genomics, Proteomics, and Bioinformatics. 1 Credit.

BIOC 6236. Medical Genomics. 2 Credits.

The structure and function of genes and genomes. Genomic theories, methods, and data analysis including bioinformatics and database mining. Prerequisite or corequisite: BIOC 6221–BIOC 6222.

BIOC 6237. Proteomics and biomarkers. 2 Credits.

Experimental proteomics, protein/proteome analysis, bioinformatics of proteomics, systems biology and structural genomics. Prerequisite: BIOC 6236.

BIOC 6238. Experimental Genomics Lab. 3 Credits.

Research applications of knowledge in genomics and proteomics. Prerequisite: BIOC 6236. Laboratory fee.

BIOC 6240. Next Generation Sequencing. 2 Credits.

BIOC 6250. Molecular Biology. 3 Credits.

Content includes the organization and replication of genetic material, transcriptional and translational machinery, regulation of eukaryotic gene expression, and other special topics. Prerequisite: BIOC 6221–BIOC 6222.

BIOC 6252. Current Laboratory Methods in Molecular Biology. 3 Credits.

Corequisite: BIOC 6221. Laboratory fee.

BIOC 6254. Fundamentals of Molecular Biology. 3 Credits.

An intermediate-level molecular biology survey course. Prerequisite: BIOC 6221.

BIOC 6260. Analytic Methods for Lipids and Carbohydrates. 3 Credits.

Basic techniques in the biotechnology of lipids and carbohydrates. Prerequisite: BIOC 6221.

BIOC 6262. Genes, diets and aging. 3 Credits.

BIOC 6264. Membrane-Associated Complex Lipids. 1 Credit.

BIOC 6281. Topics. 1,2 Credit.

Directed readings in biochemistry, molecular biology, and genetics. May be repeated for credit. Enrollment limited to graduate students in the department.

BIOC 6290. Extramural BioChem Elective. 1-12 Credits.

BIOC 6291. Extramural BioChem Elective. 1-12 Credits.

BIOC 6295. Research. 1-12 Credits.

Participation in a project under investigation or in a field suggested by the student and approved by the staff. May be repeated for credit. Laboratory fee.

BIOC 6298. Advanced Reading. 1-6 Credits.

Limited to master's degree candidates. May be repeated for credit to a maximum of 6 hours.

BIOC 6998. Thesis Research. 3 Credits.

BIOC 6999. Thesis Research. 3 Credits.

BIOC 8225. Metabolism. 4 Credits.

Metabolic pathways and integration of metabolic processes. Limited to Ph.D. students in the Institute for Biomedical Sciences.

BIOC 8231. Bioc Basis of Human Diseases. 3 Credits.

Biochemical perspectives on disorders involving metabolic alterations, immunological dysregulation, problems of environmental/toxicological etiology, genetic/epigenetic dysfunction, neglected tropical diseases. Prerequisite: BmSc 8210, 8212.

BIOC 8232. Mol Cell Signaling. 3 Credits.

BIOC 8501. Issues in Clinical Nutrition. 3 Credits.

BIOC 8502. Molecular Biology of Oncogenes. 1-12 Credits.

BIOC 8503. Readings in Immunology. 3 Credits.

BIOC 8800. Summer Remedial Biochemistry. 8 Credits.

BIOLOGICAL SCIENCES (BISC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BISC 1000. Dean's Seminar. 3 Credits.

BISC 1001. Departmental Seminar. 0 Credits.

BISC 1005. The Biology of Nutrition and Health. 3 Credits.

A study of the human body and its disorders and diseases through examination of the essential molecules of life, nutrition, digestion, genetics, and reproduction. For non-majors. Laboratory fee. (Fall).

BISC 1006. The Ecology and Evolution of Organisms. 3 Credits.

Introduction to ecology and evolution, including man's impact on other plants and animals, and an overview of Earth's biodiversity. For non-majors. Laboratory fee. (Spring).

BISC 1111. Introductory Biology: Cells and Molecules. 4 Credits.

Nutrition and metabolism, cellular and developmental biology, genetics, and molecular biology of plants and animals. Laboratory fee. (Fall).

BISC 1112. Introductory Biology: The Biology of Organisms. 4 Credits.

Concepts and methods in the study of whole organisms. Evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. Laboratory fee. (Spring).

BISC 2000. Sophomore Colloquium. 3 Credits.

Topics on biological diversity from the perspective of species and within the conceptual framework of evolutionary biology. The explanatory power, simplicity, and grandeur of evolution and its products. Consideration of how questions and hypotheses are empirically addressed. Restricted to sophomores, registration by department approval. Prerequisites: Bisc 1111 and Bisc 1112. (Fall, even years).

BISC 2202. Cell Biology. 3 Credits.

Structure and function of biological molecules and cellular organelles; cellular interactions. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor and one semester of organic chemistry.

BISC 2207. Genetics. 3 Credits.

Introduction to genetics, with emphasis on the integration of transmission of genetic traits and the molecular basis of gene action. Also includes cytogenetics, gene regulation, and examples of current applications of genetic technology. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2208. Genetics Laboratory. 1 Credit.

Study of genetic principles and genetic and molecular techniques in *Drosophila* and *E. coli*. Benchwork and comparative genomics using bioinformatics. Prerequisite or concurrent registration: BISC 1111- BISC 1112 except by permission of the instructor and BISC 2207. Laboratory fee.

BISC 2213. Biology of Cancer. 3 Credits.

BISC 2214. Developmental Biology. 4 Credits.

Lecture (2 hours), laboratory (4 hours). Embryonic development of animals. Principles illustrated by experimental studies of developmental problems. Laboratory exercises involve micromanipulative, biochemical, and molecular studies on animal embryos cultured in the lab. Laboratory fee. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2220. Developmental Neurobiology. 3 Credits.

The molecular mechanisms that guide neural development: events surrounding the birth of neurons, how specific neurons are determined, how neurons find the correct targets, how cell death guides proper neural development and synapses are formed and maintained. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2305. Plant Biology. 3 Credits.

Discussions of plant metabolism and molecular biology: photosynthesis, nitrogen metabolism, membrane transport, mechanisms of hormone action, protein targeting, biotechnology, and current research topics. Prerequisite: Chem 1111- CHEM 1112, BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2318. Histology. 4 Credits.

Lecture (2 hours), laboratory (4 hours). Introduction to microscopical anatomy of normal tissues and organs with emphasis on the interrelationship of structure and function. Laboratory fee. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2320. Neural Circuits and Behavior. 3 Credits.

The cellular and molecular properties of neural circuits that form the basis of behavior. Circuit properties and behaviors across a variety of invertebrate and vertebrate taxa. Individual neuronal units, the organizational principles and emergent properties of neural circuits, and how these neuronal ensembles influence behavior.

BISC 2322. Human Physiology. 3 Credits.

Introduction to the function of organ systems of the human body. Prerequisite: CHEM 1111- CHEM 1112, BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2322W. Human Physiology. 3 Credits.

Introduction to the function of organ systems of the human body. Prerequisite: CHEM 1111- CHEM 1112, BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2323. Human Physiology Laboratory. 1 Credit.

Study of basic physiology laboratory techniques; emphasis on the experimental study of homeostatic mechanisms in humans. Prerequisite or concurrent registration: BISC 2322, BISC 1111- BISC 1112 except by permission of the instructor. Laboratory fee.

BISC 2330. Invertebrate Zoology. 4 Credits.

Lecture (2 hours), laboratory (4 hours). General survey of invertebrate animals, including classification, morphology, physiology, embryology, and evolutionary relationships among phyla. Laboratory fee. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2331. Insect Biology. 4 Credits.

Overview of the class Insecta, focusing on insect external and internal morphology, classification, ecology/behavior, collection, and specimen preparation. Prerequisites: BISC 1111 and BISC 1112. (Fall, even years).

BISC 2332. Comparative Vertebrate Anatomy. 4 Credits.

Lecture (2 hours), laboratory (4 hours). Evolution and comparative morphology of Phylum Chordata, stressing recent forms. Laboratory fee. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2333. Integrative Biology of Fishes. 3 Credits.

BISC 2334. Integrative Biology of Fishes. 3 Credits.

This class will introduce students to concepts in anatomy, biomechanics, physiology, developmental biology, biomechanics and hydrodynamics, adaptive radiation, evolutionary biology, and ecology using fish as model organisms. Specific details about significant fish groups will be covered, but emphasis will be on exploring broader topics in which fish have figured prominently in research.

BISC 2337. Introductory Microbiology. 4 Credits.

Lecture (2 hours), laboratory (4 hours). Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, pathogenesis, and biotechnology. Antibiotic resistance and emerging diseases. Prerequisite: one year of chemistry and BISC 1111- BISC 1112 except by permission of the instructor.. Laboratory fee.

BISC 2337W. Introductory Microbiology. 4 Credits.

Lecture (2 hours), laboratory (4 hours). Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, pathogenesis, and biotechnology. Antibiotic resistance and emerging diseases. Prerequisite: one year of chemistry and BISC 1111- BISC 1112 except by permission of the instructor. Laboratory fee.

BISC 2339. Parasitology. 4 Credits.

Lecture (2 hours), laboratory (4 hours). Introduction to animal parasitology; survey of parasitic types from protozoa through arthropods. Laboratory fee. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2450. Organic Evolution. 3 Credits.

Synthetic theory of organic evolution, including population biology, specia-tion, adaptation, macroevolution, systematics, biogeography, and the geologic record. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2451. History of Life. 3 Credits.

A review of the origin of life, the geologic record, and the evolutionary history of the major groups of organisms, including the origin of life and evolution of invertebrates, vertebrates, and plants. Same as GEOL 2151. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2452. Animal Behavior. 3 Credits.

An evolutionary approach to the study of animal behavior, emphasizing behavioral ecology and sociobiology. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2454. General Ecology. 4 Credits.

Lecture (3 hours), laboratory and field (3 hours). Introduction to the concepts of limiting factors, biogeochemical cycles, trophic levels, and energy transfer and their relationship to the structure and function of population, species, communities, and ecosystems. Laboratory fee. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2454W. General Ecology. 4 Credits.

Lecture (3 hours), laboratory and field (3 hours). Introduction to the concepts of limiting factors, biogeochemical cycles, trophic levels, and energy transfer and their relationship to the structure and function of population, species, communities, and ecosystems. Laboratory fee. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2459. Ecology Economy Sustainability. 3 Credits.**BISC 2467. Marine Biology. 3 Credits.**

Study of relationships between organisms and physical, chemical, and biological factors of the marine environment. Consideration of the open ocean and coastal ecosystems and human influences on them. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 2580. Biotechnology. 3 Credits.

Genetic engineering of bacteria, plants, and animals, including humans. Applications of modern biotechnology, especially in the field of medical biotechnology, such as gene therapy, xenotransplantation, and the Human Genome Project. Regulation, prospects, and social impact of biotechnology. Prerequisite: organic chemistry and BISC 1111- BISC 1112 except by permission of the instructor. Recommended: BISC 2202 or BISC 2207.

BISC 2580W. Biotechnology. 3 Credits.

Genetic engineering of bacteria, plants, and animals, including humans. Applications of modern biotechnology, especially in the field of medical biotechnology, such as gene therapy, xenotransplantation, and the Human Genome Project. Regulation, prospects, and social impact of biotechnology. Prerequisite: organic chemistry and BISC 1111- BISC 1112 except by permission of the instructor. Recommended: BISC 2202 or BISC 2207.

BISC 2581. Human Gross Anatomy. 3 Credits.

The structural organization of the human body and how it relates to regional and systems-based functions. Emphasis on the macroscopic structure of the body. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor. Same as ANAT 2181.

BISC 2583. Biology of Proteins. 3 Credits.

About half of the proteins in the human genome have unknown functions. Are some related to cancers, muscle degeneration, infectious disease? How can evolutionary relationships among proteins from other organisms help us discover functions of unknown proteins? Laboratory fee. Prerequisite: AP or IB Biology or Chemistry.

BISC 2584. Introduction to Bioinformatics. 3 Credits.

An introduction to the use of computational techniques in molecular biology, genetics, and evolution. Techniques and software for database searching, sequence alignment, gene finding, phylogenetics, genomics, and proteomics. Same as CSCI 3571. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 3165. Biochemistry I. 3 Credits.

BISC 3166. Biochemistry II. 3 Credits.**BISC 3209. Molecular Biology. 4 Credits.**

Overview of theories, techniques, and procedures associated with molecular biology; topics include the biosynthesis of DNA, RNA, and proteins, relationships among structure, function, and expression; and traditional and modern methods of gene and protein characterization and monitoring. Prerequisite: CHEM 1111- CHEM 1112 and BISC 1111- BISC 1112 except by permission of the instructor. Laboratory fee.

BISC 3210. Nanobiotechnology. 3 Credits.

Theory and application of nanotechnologies in biology and medicine. Strategies for studying the organization, function, and complexity of biological systems at nm scale. Several areas of research are covered, including high-resolution cellular and molecular imaging, spectroscopy, and optical tweezers. Prerequisite: BISC 2202 or BISC 3261 or permission of instructor and BISC 1111- BISC 1112 except by permission of the instructor.

BISC 3211. Nanobiotechnology Laboratory. 1 Credit.

Overview of techniques and approaches to studying complex biological interactions at nm scale. Prerequisite: BISC 3210 or permission of instructor and BISC 1111- BISC 1112 except by permission of the instructor. Laboratory fee. (Spring, even years).

BISC 3212. Immunology. 3 Credits.

Introduction to mammalian immunology covering the progression of immune responses from initial pathogen contact to immune memory. Applied topics include autoimmunity, transplantation, and the effects of HIV on the immune system. Prerequisite: BISC 2202 and one semester of organic chemistry and BISC 1111- BISC 1112 except by permission of the instructor.; BISC 2207 or BISC 2322 recommended.

BISC 3213. Applied Immunology. 3 Credits.

Overview of current immunologically relevant topics, including autoimmunity, transplantation, cancer, HIV, allergy, vaccines, and immunologically based diagnostics. Prerequisite: BISC 3212 and BISC 1111- BISC 1112 except by permission of the instructor.

BISC 3261. Introductory Medical Biochemistry. 4 Credits.

Introduction to structures of biological macromolecules, enzyme catalysis, cellular bioenergetics, and metabolism. Same as BIOC 3261. Prerequisite: CHEM 2151-CHEM 2152. Credit toward the degree cannot be earned for this course and for CHEM 3165.

BISC 3262. Biochemistry Laboratory. 2 Credits.

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Same as BIOC 3262/ CHEM 3262. Prerequisite: BISC 3261 and BISC 1111- BISC 1112 except by permission of the instructor. Laboratory fee.

BISC 3263. Special Topics in Biochemistry. 2 Credits.

In-depth discussion of current biochemically relevant topics, including cancer and HIV chemotherapy, immune response, photosynthesis, signal transduction, hormone regulation and nutrition. Topics vary. Same as BIOC 3263. Prerequisite: BISC 3261 and BISC 1111- BISC 1112 except by permission of the instructor. Credit toward the degree cannot be earned for this course and for CHEM 3166.

BISC 3263W. Special Topics in Biochemistry. 2 Credits.

In-depth discussion of current biochemically relevant topics, including cancer and HIV chemotherapy, immune response, photosynthesis, signal transduction, hormone regulation and nutrition. Topics vary. Same as BIOC 3263. Prerequisite: BISC 3261 and BISC 1111- BISC 1112 except by permission of the instructor. Credit toward the degree cannot be earned for this course and for CHEM 3166.

BISC 3320. Human Neurobiology. 3 Credits.

Introduction to the function of the human nervous system, gross and microscopic structure, and neurophysiology of the brain, spinal cord, and nerves; alterations caused by disease or injury. Prerequisite: BISC 2202 or BISC 3261 and BISC 1111- BISC 1112 except by permission of the instructor.

BISC 3321. Comparative Endocrinology. 3 Credits.

Basic principles of chemical integration, neuroendocrine relationships, and mechanisms of hormone action. Prerequisite: BISC 2318 or BISC 2322 and BISC 1111- BISC 1112 except by permission of the instructor.

BISC 3325. Environmental Physiology. 3 Credits.

Mechanisms of evolutionary adaptation and processes of acclimation by which animals respond to environmental challenges; emphasis on vertebrates. (Spring).

BISC 3450. Evolutionary Medicine. 3 Credits.

The application of evolutionary principles, including natural selection, adaptation, phylogenetics, and evolutionary constraints, to understanding health, disease, and the biology of disease-causing organisms (viruses, bacteria, and parasites). How natural selection and phylogeny influence pathogen-host interactions, human genetics, immunology, development, cancer, and diseases of senescence. Prerequisites: BISC 1111 and BISC 1112. Recommended background: Organic Evolution (BISC 2450) and Genetics (BISC 2207). (Fall, even years).

BISC 3450W. Evolutionary Medicine. 3 Credits.**BISC 3458. Plant Comparative Structure and Function. 3 Credits.**

Fundamental principles of how organisms are built, investigating trade-offs and coordination in design, how variation in structure influences physiological function in different ecological settings, and how relations among plants shape structure and function and responses to ecological gradients. Prerequisite: BISC 1111- BISC 1112 except by permission of the instructor.

BISC 3459. Field Biology. 4 Credits.

Overview of the approaches and techniques used by contemporary field biologists for cataloging, quantifying, and comparing patterns of biodiversity across plants, animals, and fungi at multiple spatial and temporal scales. Prerequisites: BISC 1111 and BISC 1112. Recommended background: General Ecology (BISC 2454). (Fall).

BISC 3460. Conservation Biology. 3 Credits.

Theory and practice of conserving biological diversity. Ecological patterns of biodiversity, biology of small populations, and conservation case studies. Use of ecological modeling software to explore various topics. Prerequisite: BISC 2454 or permission of instructor and BISC 1111– BISC 1112 except by permission of the instructor.

BISC 3461. Plant-Animal Interactions. 3 Credits.

Review of the major ecological and evolutionary interactions that occur between plants and animals in natural and managed ecosystems. Prerequisite: BISC 1111– BISC 1112 except by permission of the instructor. BISC 2450 or BISC 2454 recommended. (Fall, even years).

BISC 3462. Plant³/₄Animal Interactions Laboratory. 1 Credit.

Field and laboratory study of temperate interactions between plants and animals. Group projects focus on original data collection, analysis, and interpretation. Prerequisite or concurrent registration: BISC 3461 and BISC 1111– BISC 1112 except by permission of the instructor. Laboratory fee. (Fall, even years).

BISC 3463. Ecological and Evolutionary Genetics. 3 Credits.

An analysis of the ecological and genetic basis of evolutionary change. Topics include the organization and maintenance of genetic variation within and among natural populations, the genetic basis of complex traits, molecular ecology analyses, and genotype by environment interactions. Prerequisite: BISC 2450 or permission of instructor and BISC 1111– BISC 1112 except by permission of the instructor.

BISC 3564. Lipid Biotechnology. 0-2 Credits.

Same as BIOC 3564/CHEM 3564. Prerequisite: BIOC 3261/ BISC 3261 or CHEM 3165. Laboratory fee.

BISC 4171. Undergraduate Research. 1-12 Credits.

Admission by permission of the staff member concerned. May be repeated for credit. Prerequisite: CHEM 2152 and BISC 1111– BISC 1112 except by permission of the instructor; 16 credit hours in biological science courses. Laboratory fee.

BISC 4171W. Undergraduate Research. 1-12 Credits.

Admission by permission of the staff member concerned. May be repeated for credit. Prerequisite: Chem 2152 and BISC 1111– BISC 1112 except by permission of the instructor; 16 credit hours in biological science courses. Laboratory fee.

BISC 4172. Independent Study. 1-3 Credits.

Prescribed reading list and consultations with staff advisor culminating in a written report and/or examination. Prerequisite: BISC 1111– BISC 1112 and permission of the instructor.

BISC 4173. Independent Study-Developmental Biology. 2 Credits.**BISC 4174. Independent Study-Organismic Biology. 2 Credits.****BISC 4175. Independent Study-Genetic/Evolutionary Biology. 2 Credits.****BISC 4176. Independent Study-Environmental Bio. 2 Credits.****BISC 4180. Undergraduate Research Seminar. 1 Credit.****BISC 6101. Responsible Research. 1 Credit.**

This course provides an introduction to the ethical, social, and legal foundations of scientific practice. It is intended to provide a forum for graduate students and postdocs to discuss almost every aspect of the academic life of a scientist, except specific disciplinary topics that are treated in regular courses. Ensuring ethical conduct is an essential part of basic, applied, and clinical research, especially in the context of competitive, collaborative, and international settings so common nowadays. Students will be exposed to case studies typifying complex social, ethical, and legal dilemmas that may arise in the conduct of research.

BISC 6102. Scientific Presentation. 1 Credit.

This course allows students to perfect their Scientific Presentation skills. In this course, students will present, in front of peers and faculty, their current research projects and plans for future work leading towards a complete thesis or dissertation. Student presentations will be designed to address a general audience of biologists, containing sufficient background information to provide perspective insights into the fundamental questions being asked, and at the same time providing enough detail on technical issues and analytical procedures to allow evaluation of potential outcomes. The Class will provide a friendly forum for students to collect feedback and comments, to discuss project design, content, and general significance of their research.

BISC 6205. Current Topics in Cell Smith, Donaldson, Eleftherianos, Jeremic. 1-2 Credits.

May be repeated for credit. Prerequisite: BISC 2202 or BISC 3209.

BISC 6206. Current Topics in Evolutionary Ecology. 1-2 Credits.

May be repeated for credit.

BISC 6207. Seminar: Current Topics Clark, Hormiga, Lipscomb, Ortí, Pyron. 1-2 Credits.

Prerequisite: BISC 6210.

BISC 6210. Methods of Study of Evolution. 4 Credits.

A rigorous and up-to-date treatment of the theory and methods of systematics, including phylogenetic inference and its applications in evolutionary biology. Laboratory fee. Prerequisite: BISC 2450 .

BISC 6211. Biogeography/Coevolution. 4 Credits.

Survey of methods, techniques, and theory in biogeography. Geological and paleontological aspects of biogeography; large-scale biogeographic patterns; speciation and phylogeography. Prerequisite: BISC 2451 or BISC 2452 or permission of the instructor.

BISC 6213. Descriptive Systematics: Documenting Biodiversity. 3 Credits.

Study of those aspects of systematic biology concerned with description and inventory of biodiversity. Prerequisite: BISC 6210.

BISC 6214. The Phylogenetic Basis of Comparative Biology. 3 Credits.

The use of phylogenetic hypotheses to study questions in evolutionary biology and ecology. Prerequisite: BISC 6210; STAT 1127.

BISC 6215. Vertebrate Phylogeny. 4 Credits.

A survey of vertebrate diversity, emphasizing evolutionary relationships and adaptations of the major groups. Prerequisite: BISC 2450 ; BISC 2332 recommended.

BISC 6216. Morphological Systematics. 4 Credits.

Methods of studying organismal morphology as a means of inferring phylogeny, emphasizing the concept of homology. Laboratory includes techniques of observing, measuring, and imaging morphology in systematic biology, including morphometric methods. Laboratory fee. Prerequisite: BISC 6210.

BISC 6218. Innate Immunity. 3 Credits.

Discussion of innate immune systems in a wide variety of organisms; from sponges to vertebrates plus higher plants. Prerequisite: BISC 3212; recommended BISC 2202, BISC 2207, BISC 3209, BISC 2330.

BISC 6219. Host-Microbe Interactions. 3 Credits.

Overview of the molecular, genetic, cellular, and physiological basis of symbiotic and pathogenic interactions between plants and invertebrate and vertebrate animals and various microbial organisms, including bacteria, fungi, and viruses. Prerequisites: Microbiology (BISC 2337). Recommended background: Intro to Immunology (BISC 3212); Cell Biology (BISC 2202); Invertebrate Zoology (BISC 2330); Parasitology (BISC 2339), or permission of instructor. (Spring).

BISC 6224. Molecular Evolution. 3 Credits.

BISC 6225. Molecular Phylogenetics. 4 Credits.
Review of molecular phylogenetic methods including data recovery, alignment, weighting, character optimization, and phylogenetic inference methods. Prerequisite: BISC 2207, BISC 2450, and BISC 6210.

BISC 6227. Seminar: Genetics. 3 Credits.

Review of selected topics in genetics, with emphasis on current literature; topics of special interest to participants encouraged. May be repeated for credit. Prerequisite: BISC 2207.

BISC 6228. Population Genetics. 3 Credits.

Origin, maintenance, and possible significance of genetic variation in populations. Selection, genetic drift, and population structure are emphasized. Both theoretical and applied aspects of population genetics are discussed. Same as FORS 6247. Prerequisite: BISC 2207.

BISC 6230. Human Genetics. 3 Credits.

Genetic mechanisms of transmission and expression of human traits, with emphasis on biochemical and cytogenetic aspects. Prerequisite: BISC 2207; previous course work in cell biology or cell biochemistry strongly recommended.

BISC 6243. Seminar: Ecology. 3 Credits.

In-depth study of selected topics, including reports on original publications. May be repeated for credit. Prerequisite: BISC 2454.

BISC 6249. Seminar: Developmental Biology. 3 Credits.

Discussion and reports on recent research on the endocrinological, genetic, and biochemical aspects of animal development. Prerequisite: a course in developmental biology or cell biology.

BISC 6251. Evolutionary Developmental Biology. 3 Credits.

Developmental mechanisms involved in the morphological changes that occur during the course of evolution. (Spring).

BISC 6252. Seminar: Neurobiology. 3 Credits.

Study of current publications in functional neurobiology. May be repeated for credit with instructor's permission. (Spring, odd years).

BISC 6274. Gene Regulation and Genetic Engineering. 3 Credits.

The control of gene expression as illustrated by several prokaryotic and eukaryotic model systems: discussions of recombinant DNA techniques. Prerequisite: BISC 2207.

BISC 6275. Introduction to Recombinant DNA Techniques. 3 Credits.

Lecture, 1 hour; laboratory, 4 hours. Basic techniques of genetic manipulation: cloning of genes, transformation of bacteria, PCR procedures, DNA sequencing, and other techniques. Prerequisite: BISC 2202 or BISC 2207 or BISC 2337 and permission of instructor. Laboratory fee.

BISC 6295. Research. 1-12 Credits.

Investigation of special problems. May be repeated for credit.

BISC 6998. Thesis Research. 3 Credits.**BISC 6999. Thesis Research. 3 Credits.****BISC 8998. Advanced Reading & Research. 1-12 Credits.**

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

BISC 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

BIOMEDICAL SCIENCES (BMSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BMSC 8210. Genes to Cells. 4 Credits.

Proteins structure and function, introduction to metabolic processes. Structure and function of nucleic acids, organization of the genome, and regulation of protein synthesis and processing. Registration with permission of instructor.

BMSC 8212. Developmental Cell Biology and Systems Physiology. 4 Credits.

Structure and functions of cells and tissues, techniques used for the analysis of cell function (image analysis, microscopy). Physiological bases of organ systems and origins of disease. Registration with permission of instructor.

BMSC 8214. Molecular Medicine II. 2 Credits.

BMSC 8215. Lab Rotations. 1 Credit.

For Ph.D. students enrolled in the Institute for Biomedical Sciences. Laboratory training in advanced techniques in biomedical sciences research practices. May be repeated for credit.

BMSC 8216. Career Skills for the Biomedical Sciences. 1 Credit.

Scientific writing, presentation skills, and seminar planning. Developing roles in the field: research in varying settings, policy and program planning, grants administration, and the biotechnology issues within intellectual property law. Ethical issues related to the conduct of research, animal use, and human subject participation. The design of a successful grant proposal.

BMSC 8217. Career Skills for the Biomedical Sciences. 1 Credit.

Continuation of BMSC 8216. Scientific writing, presentation skills, and seminar planning. Developing roles in the field: research in varying settings, policy and program planning, grants administration, and the biotechnology issues within intellectual property law. Ethical issues related to the conduct of research, animal use, and human subject participation. The design of a successful grant proposal.

BMSC 8218. Career Skills for the Biomedical Sciences. 1 Credit.

Continuation of BMSC 8217. Scientific writing, presentation skills, and seminar planning. Developing roles in the field: research in varying settings, policy and program planning, grants administration, and the biotechnology issues within intellectual property law. Ethical issues related to the conduct of research, animal use, and human subject participation. The design of a successful grant proposal.

BMSC 8230. Molecular Basis of Human Disease. 3 Credits.

Principles of systems biology in the context of specific diseases. Problem solving at multiple levels of biology, integrating knowledge of DNA, RNA, proteins, cell biology, and tissue physiology. Prerequisite: BMSC 8210, BMSC 8212.

BMSC 8231. Advanced Proteomics Methods and Applications. 2 Credits.

Proteomics approaches to specific questions about a biological system. Advanced methods and applications. Prerequisite: BMSC 8230.

BMSC 8232. Integrative Approaches to Biomedicine. 2 Credits.

Integrated network approaches for accurate disease classification, diagnosis, and prognosis prediction; identification of novel therapeutic targets; determination of appropriate dosing. Prerequisite: BMSC 8230.

BMSC 8233. Integrative Bioinformatics. 2 Credits.

Bioinformatics techniques for analysis of macromolecular sequences, structures, gene expression arrays, and proteomics. Systems biology approaches to research problems. Prerequisite: BMSC 8230.

BMSC 8234. Seminar in Systems Biology. 2 Credits.

Prerequisite: permission of instructor.

BMSC 8235. Applied Biostatistics for Basic Research. 2 Credits.

The handling and interpretation of large data sets, including biological data and genomic data. Restricted to Permission of instructor. Prerequisites: none. (Fall).

BMSC 8998. Readings and Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

BMSC 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

BIOSTATISTICS (BIOS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BIOS 6295. Reading and Research. 1-12 Credits.

May be repeated for credit.

BIOS 6998. Thesis Research. 3 Credits.

BIOS 6999. Thesis Research. 3 Credits.

BIOS 8998. Advanced Reading and Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

BIOS 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

BUSINESS ADMINISTRATION (BADM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BADM 1001. First Year Development Course I. 1 Credit.

Required of all first-year students in School of Business. This course is designed to enhance students' education and begin preparation for business careers. The course meets periodically during the semester. Course fee. Restricted to students in the first year of enrollment in School of Business.

BADM 1002. First Year Development Course II. 1 Credit.

Continuation of BADM 1001. Required of all first-year students in School of Business. This course is designed to enhance students' education and begin preparation for business careers. The course meets periodically during the semester. Course fee. Restricted to students in the first year of enrollment in School of Business.

BADM 1003. Transfer Student Development. 1 Credit.

BADM 1004. The Age of Globalization. 3 Credits.

A multidisciplinary foundation for all School of Business freshmen in assessing the geopolitical and political economy landscape of various regions and critical issues, viewing the world through a global lens while analyzing newsworthy current events and understanding their implications within their geographic, historic, political, economic, social, and cultural context. The central theme of this course is globalization of people, markets, and firms. The course coordinates with the newspaper reading requirement of the first-year development program. (Fall and spring).

BADM 1101. Organizational Behavior. 3 Credits.

Introduction to concepts of psychology and the social dynamics that characterize organizations. Decision making, motivation, attitudes, teamwork, power, and leadership. An experiential laboratory component uses case discussions and exercises to illustrate applications of theory and concepts. Restricted to School of Business freshmen. (Fall and spring).

BADM 1900. Special Topics. 1-3 Credits.

BADM 2001. Markets and Politics. 3 Credits.

Economic and political resource allocation; social and political influences on business organizations; contemporary problems and issues. (Fall and spring).

BADM 2001W. Markets and Politics. 3 Credits.

Economic and political resource allocation; social and political influences on business organizations; contemporary problems and issues. (Fall and spring).

BADM 2003W. Analysis of Business Issues. 3 Credits.

Restricted to School of Business students in their sophomore year. Introduction to common language and analytic techniques. Business concepts and information resources are introduced through case analysis focusing on written and verbal communication and critical thinking skills.

BADM 2101. Management, Organizations, and Society. 1.5 Credit.

A history of management thought and an introduction to the role of the manager and the management process in the context of organizations and society.

BADM 2201. International Financial Environment. 1.5 Credit.

Assessment of international economic and financial environments as they affect international corporate activity. Conceptual issues and current developments in the international financial environment, including an overview of international economic systems, international financial systems, and global financial markets. Prerequisite: ECON 1012.

BADM 2301. Management Information Systems Technology. 3 Credits.

An introduction to data and information processing concepts and systems viewed from a contemporary management perspective. Emphasis on uses and applications as well as emerging managerial issues with the potential to reshape the form and function of information systems. Lab required. Prerequisite: basic knowledge of Microsoft Word, Excel, and PowerPoint.

BADM 2301W. Mgt Information Systems Tech. 3 Credits.

An introduction to data and information processing concepts and systems viewed from a contemporary management perspective. Emphasis on uses and applications as well as emerging managerial issues with the potential to reshape the form and function of information systems. Lab required. Prerequisite: basic knowledge of Microsoft Word, Excel, and PowerPoint.

BADM 3001. Career Management Strategy. 1 Credit.

Restricted to School of Business students in their junior year. The career development process, including job search strategies and formulation of a career management plan, with practice in producing a resume and interviewing for a position.

BADM 3101. Human Resource Management. 3 Credits.

Global and strategic implications of human capital policies and practices, including human resource planning, recruitment, selection, training, development, compensation, and collective bargaining. Prerequisite: BADM 1101 or PSYC 1001.

BADM 3102. Business and Government Relations. 3 Credits.

Economic and legal environment of business enterprise; social and political influences; contemporary problems and issues.

BADM 3102W. Business/Government Relations. 3 Credits.**BADM 3401. Basic Marketing Management. 3 Credits.**

Consumer and organizational buying behavior. Strategic marketing processes (market research, segmentation, targeting, positioning, and relationship-building). Product development and brand management, valuation and pricing, channel and logistics management, integrated marketing communications, e-commerce. Prerequisite: ECON 1012 or HONR 2044. (Fall and spring).

BADM 3401W. Basic Marketing Management. 3 Credits.

Consumer and organizational buying behavior. Strategic marketing processes (market research, segmentation, targeting, positioning, and relationship-building). Product development and brand management, valuation and pricing, channel and logistics management, integrated marketing communications, e-commerce. Prerequisites: ECON 1012 or HONR 2044. (Fall and spring).

BADM 3501. Financial Management and Markets. 3 Credits.

Introduction to financial markets, investment analysis, and financial management. Financial analysis, risk management, working capital management, capital budgeting, financial structure, cost of capital, and dividend policy. Prerequisites: ACCY 2001; ECON 1012 or HONR 2044; MATH 1221 or MATH 1231 or MATH 1252; STAT 1051, STAT 1053, or STAT 1111. (Fall and spring).

BADM 3601. Operations Management. 3 Credits.

Production planning concepts and analytical tools. Designing and managing production processes: facilities, equipment, process control systems. Design issues, demand forecasting, material planning, acquisition techniques. Managing the factory floor: scheduling, total quality management, continuous improvement concepts and methods. Prerequisite: STAT 1051, STAT 1053, or STAT 1111. (Fall and spring).

BADM 3999. Bus. Admin. Trans. Cred-Upper. 1-36 Credits.**BADM 4101. Business Law and Ethics. 3 Credits.**

Overview of the American legal system and related ethical issues with reference to business law and the Universal Commercial Code. Key legal concepts such as contracts and torts. The role of courts: regulation, litigation, and constitution issues.

BADM 4801. Strategy Formulation and Implementation. 3 Credits.

An integrative capstone course to develop skills in diagnosing organizational problems, formulating and selecting strategic alternatives, and recognizing problems inherent in strategy implementation. Restricted to seniors in the B.B.A., B.Accy., and SEAS business concentration programs.

BADM 4900. Special Topics. 0-3 Credits.

Experimental offering; new course topics and teaching methods.

BADM 4900W. Special Topics. 0-3 Credits.

Experimental offering; new course topics and teaching methods.

BADM 4950. Internship. 0 Credits.

School of Business undergraduates may register for this course when they wish to have an internship recorded on the transcript. The supervisor must verify that the internship has been completed for a minimum of six hours per week. An administrative fee is charged. May be repeated each semester if desired.

BADM 4995. Independent Study. 1-6 Credits.

Assigned topics with interdisciplinary focus. Admission by prior permission of advisor. May be repeated once for credit but in a separate semester.

CHEMISTRY (CHEM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CHEM 1000. Dean's Seminar. 3 Credits.

Contemporary topics in chemistry. (Spring).

CHEM 1003. Contemporary Science for Nonscience Majors. 3 Credits.

Contemporary topics in physical, biological, and medical science. Chem 1003 is not prerequisite to Chem 1004.

Laboratory fee.

CHEM 1004. Contemporary Science for Nonscience Majors. 3 Credits.

Continuation of CHEM 1003. Contemporary topics in physical, biological, and medical science. Chem 1003 is not prerequisite to Chem 1004. Laboratory fee.

CHEM 1111. General Chemistry I. 4 Credits.

Atomic structure and properties; stoichiometry; gas, liquid, and solid state; chemical bonding; solutions; chemical kinetics and equilibria; thermodynamics; acids and bases; electrochemistry; descriptive chemistry. Prerequisite: one year of high school algebra. Laboratory fee.

CHEM 1112. General Chemistry II. 0-4 Credits.

Continuation of CHEM 1111. Atomic structure and properties; stoichiometry; gas, liquid, and solid state; chemical bonding; solutions; chemical kinetics and equilibria; thermodynamics; acids and bases; electrochemistry; descriptive chemistry. Prerequisite: CHEM 1111. Laboratory fee.

CHEM 2010. History of Chemistry. 2,3 Credits.

CHEM 2085. Environmental Chemistry. 3 Credits.

Chemistry and physics of the environment, with emphasis on water and air pollution; environmental analysis and modeling and their limitations. (Fall).

CHEM 2122. Introductory Quantitative Analysis. 3 Credits.

Theory and practice of quantitative analysis by modern methods; evaluation of analytical data emphasizing detection and correction of experimental errors. Correlated with CHEM 2123. Prerequisite: CHEM 1112.

CHEM 2123. Introductory Quantitative Analysis Laboratory. 1 Credit.

Laboratory complement to CHEM 2122. Prerequisite or concurrent registration: CHEM 2122. Laboratory fee.

CHEM 2123W. Introductory Quantitative Analysis Laboratory. 1 Credit.

Laboratory complement to CHEM 2122. Prerequisite or concurrent registration: CHEM 2122. Laboratory fee.

CHEM 2151. Organic Chemistry I. 3 Credits.

Systematic treatment of the structure, preparation, properties, and reactions of the principal classes of organic compounds. Fundamental principles of stereochemistry, reaction mechanisms, and spectroscopic methods of analysis. Prerequisite to CHEM 2151: CHEM 1112.

CHEM 2152. Organic Chemistry II. 3 Credits.

Continuation of CHEM 2151. Systematic treatment of the structure, preparation, properties, and reactions of the principal classes of organic compounds. Fundamental principles of stereochemistry, reaction mechanisms, and spectroscopic methods of analysis. Prerequisite to CHEM 2152: CHEM 2151.

CHEM 2153. Organic Chemistry Laboratory I. 1 Credit.

Laboratory complement of CHEM 2151. Introduction to and practice in basic skills of synthesis, separation, purification, and identification of organic compounds. Prerequisite or concurrent registration: CHEM 2151. Laboratory fee.

CHEM 2154. Organic Chemistry Laboratory II. 1 Credit.

Continuation of CHEM 2153. Laboratory complement of CHEM 2152. Introduction to and practice in basic skills of synthesis, separation, purification, and identification of organic compounds. Prerequisite or concurrent registration: CHEM 2152. Prerequisite: CHEM 2153. Laboratory fee.

CHEM 3140. Geochemistry. 3 Credits.

Chemical systems and processes on the planet Earth; origins and interactions among and within the Earth's lithosphere, oceans, and atmosphere; origin, distribution, and behavior of the elements; radioactive and stable isotope systems. Aqueous geochemistry; geochemical cycles. Same as GEOL 3140. Prerequisite: GEOL 1001 or GEOL 1005; CHEM 1111–CHEM 1112.

CHEM 3143. Aqueous Geochemistry. 3 Credits.

Same as Geol 143.

CHEM 3165. Biochemistry I. 3 Credits.

Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. Prerequisite: CHEM 2151; credit toward the degree cannot be earned for CHEM 3165 and for BIOC 3261/ BISC 3261.

CHEM 3166. Biochemistry II. 3 Credits.

Continuation of CHEM 3165. Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. CHEM 3165 is prerequisite to CHEM 3166. Credit toward the degree cannot be earned for CHEM 3166 and for BIOC 3263/ BISC 3263.

CHEM 3166W. Biochemistry II. 3 Credits.

Continuation of CHEM 3165. Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. CHEM 3165 is prerequisite to CHEM 3166. Credit toward the degree cannot be earned for CHEM 3166 and for BIOC 3263/ BISC 3263.

CHEM 3170. Introduction to Physical Chemistry. 3 Credits.

Thermodynamics, chemical and physical equilibria, kinetics, and spectroscopy. Examples taken from biological systems. Not open to chemistry majors. May not be taken for credit by students who have received credit for CHEM 3171- CHEM 3172 or an equivalent course. Prerequisites: CHEM 1111- CHEM 1112; MATH 1231; PHYS 1012 or PHYS 1022 or PHYS 1026; or permission of instructor. (Fall).

CHEM 3171. Physical Chemistry I. 3 Credits.

Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules. Prerequisite: CHEM 1112; MATH 1231; PHYS 1022; or permission of instructor.

CHEM 3172. Physical Chemistry II. 3 Credits.

Continuation of CHEM 3171. Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules. Prerequisite: CHEM 3171.

CHEM 3173. Physical Chemistry Laboratory. 2 Credits.

Laboratory complement to CHEM 3171. Prerequisite or concurrent registration: CHEM 2123, CHEM 3171. Laboratory fee.

CHEM 3262. Biochemistry Laboratory. 2 Credits.

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Same as BIOC 3261/ BISC 3261. Prerequisite: CHEM 3165 or BIOC 3261/ BISC 3261. Laboratory fee.

CHEM 3263W. Special Topics in Biochemistry. 2 Credits.**CHEM 3564. Lipid Biotechnology. 0-2 Credits.**

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Same as BIOC 3261/ BISC 3261. Prerequisite: CHEM 3165 or BIOC 3261/ BISC 3261. Laboratory fee.

CHEM 4113. Chemical Instrumentation. 3 Credits.

Electronic analog measurements and control of electrical quantities in chemical instrumentation; digital and analog data conversion and optimization of electronic measurements in chemical instrumentation; computer interfacing and programming using PC-based systems. Prerequisite: CHEM 3172 and CHEM 4122. Laboratory fee.

CHEM 4122. Instrumental Analytical Chemistry. 3 Credits.

Theory of instrumental methods in qualitative and quantitative analysis, determination of structure, with emphasis on atomic and molecular spectrophotometry, infrared spectroscopy, nuclear magnetic resonance, mass spectrometry, chromatography, and electroanalysis. Prerequisite or concurrent registration: CHEM 3171 or permission of instructor. Correlated with CHEM 4123.

CHEM 4123. Instrumental Analytical Chemistry Laboratory. 2 Credits.

Laboratory complement to CHEM 4122. Prerequisite or concurrent registration: CHEM 3171 and CHEM 4122. Laboratory fee.

CHEM 4134. Descriptive Inorganic Chemistry. 3 Credits.

Emphasis on periodic trends and structure and reactivity of transitional metal complexes. Prerequisite: CHEM 2122.

CHEM 4195. Undergraduate Research. 1-3 Credits.

Research on problems approved by the staff. Approval must be obtained prior to registration. A final written report on the work is required. For students requesting Special Honors in chemistry, a poster or oral presentation is also required. May be repeated for credit. Majors are encouraged to take the course for two semesters. Laboratory fee.

CHEM 4195W. Undergraduate Research. 1-3 Credits.

Research on problems approved by the staff. Approval must be obtained prior to registration. A final written report on the work is required. For students requesting Special Honors in chemistry, a poster or oral presentation is also required. May be repeated for credit. Majors are encouraged to take the course for two semesters. Laboratory fee.

CHEM 6221. Spectrochemical Analysis. 3 Credits.

Theory and application of recent spectrometric methods of analysis, including advances in optimization techniques, optical instrumentation, atomic spectrometry, laser-based analytical techniques, X-ray methods, and surface analysis techniques. Prerequisite: CHEM 4122.

CHEM 6222. Biomedical Mass Spectrometry. 3 Credits.

Principles, instrumentation, methods, and applications of mass spectrometry; selected state-of-the-art methods demonstrate basic principles to show how new methods of analysis are developed; typical applications highlight solutions of biomedical problems, including proteomics and metabolomics. Prerequisite: CHEM 4122.

CHEM 6235. Advanced Inorganic Chemistry I. 3 Credits.

Application of modern chemical theories to inorganic substances and reactions; detailed study, developed from the periodic table, of the chemistry of the more common elements; electronic spectra and reaction mechanisms of complexes; organometallic chemistry; homogeneous and heterogeneous catalysis; bioinorganic chemistry. Prerequisite: CHEM 3172, CHEM 4134.

CHEM 6236. Advanced Inorganic Chemistry II. 3 Credits.

Continuation of CHEM 6235. Application of modern chemical theories to inorganic substances and reactions; detailed study, developed from the periodic table, of the chemistry of the more common elements; electronic spectra and reaction mechanisms of complexes; organometallic chemistry; homogeneous and heterogeneous catalysis; bioinorganic chemistry. Prerequisite: CHEM 3172, CHEM 4134.

CHEM 6238. Chem of Inorganic Materials. 3 Credits.

Synthesis, structure, and properties of materials such as ceramics, superconductors, ionic conductors, nanomaterials, and magnetic, optical, and electronic materials. Emphasis on traditional and low-temperature routes. Prerequisite: CHEM 3171–CHEM 3172.

CHEM 6251. Advanced Organic Chemistry I. 3 Credits.

Synthesis, reactions, and properties of organic compounds; fundamental theories of organic chemistry, emphasis on reaction mechanisms. Prerequisite: CHEM 2152.

CHEM 6252. Advanced Organic Chemistry II. 3 Credits.

Continuation of CHEM 6251. Synthesis, reactions, and properties of organic compounds; fundamental theories of organic chemistry, emphasis on reaction mechanisms. Prerequisite: CHEM 6251.

CHEM 6257. Physical-Organic Chemistry. 3 Credits.

The transition state theory of chemical kinetics, applications to reaction mechanisms; kinetic isotope effects, linear-free energy relationships, concentrated and “super” acids, Woodward-Hoffman rules, free radical reactions. Prerequisite: CHEM 6251 or permission of instructor.

CHEM 6259. Polymer Chemistry. 3 Credits.

A study of the preparation, properties, and structure of macromolecules. Prerequisite: CHEM 2152 and CHEM 3170 or CHEM 3171 or permission of instructor.

CHEM 6273. Chemical Thermodynamics. 3 Credits.

Application of thermodynamics to chemical problems. Emphasis on statistical calculation of thermodynamic properties. Prerequisite: CHEM 3172 or CHEM 6372.

CHEM 6277. Chemical Bonding. 3 Credits.

Quantum mechanics, approximate methods, electron spin, Pauli principle, atomic and molecular structure. Prerequisite: CHEM 3172 or CHEM 6372.

CHEM 6278. Molecular Spectroscopy. 3 Credits.

Applications of quantum mechanics and group theory to the interpretation of electronic, vibrational, rotational, and magnetic resonance spectroscopy. Prerequisite: CHEM 6277.

CHEM 6314. Fundamental-Computational Chem. 3 Credits.**CHEM 6315. Computational Chem-Biomolecule. 3 Credits.****CHEM 6320. Selected Topics in Analytical Chemistry. 1-3 Credits.**

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of analytical chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6330. Selected Topics in Inorganic Chemistry. 1-3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of inorganic chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6350. Selected Topics in Organic Chemistry. 1-3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field in organic chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6358. Synthesis and Structure Determination in Organic Chemistry. 3 Credits.

The design of syntheses for complex organic molecules; survey of modern synthetic methods, including asymmetric induction; spectroscopic methods of structure determination. Prerequisite: CHEM 6251 or permission of instructor.

CHEM 6370. Selected Topics in Physical Chemistry. 1-3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of physical chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6371. Physical Chemistry I. 1-3 Credits.

Same as CHEM 3171. Admission only by departmental permission. Credit assigned upon satisfactory completion of CHEM 6372.

CHEM 6372. Physical Chemistry II. 1-3 Credits.

Continuation of CHEM 6371. Same as CHEM 3172. Admission only by departmental permission. Credit for CHEM 6371 assigned upon satisfactory completion of this course.

CHEM 6390. Selected Topics in Chemistry. 0-3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field in chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6395. Research. 1-12 Credits.

Limited to master's degree candidates. Survey of a topic approved by departmental staff and resulting in a written report and presentation of a seminar. Open to qualified students with advanced training. May be repeated for credit.

CHEM 6998. Thesis Research. 3 Credits.

Limited to students in the master's degree program. (Fall, spring, and summer).

CHEM 6999. Thesis Research. 3 Credits.

Limited to students in the Master's Degree program. (Fall, spring, and summer).

CHEM 8998. Advanced Reading and Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

CHEM 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

CHINESE (CHIN)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CHIN 1000. Dean's Seminar. 3 Credits.

CHIN 1001. Beginning Chinese I. 4 Credits.

Fundamentals of grammar and pronunciation, with graded reading and practice in writing. Laboratory fee. (Academic year).

CHIN 1002. Beginning Chinese II. 4 Credits.

Continuation of CHIN 1001. Fundamentals of grammar and pronunciation, with graded reading and practice in writing. Laboratory fee.

CHIN 1011. Intensive Beginning Chinese. 8 Credits.

Intensive beginning course equivalent to CHIN 1001–CHIN 1002. Laboratory fee.

CHIN 1088. E-Learning Tools for Chinese. 1 Credit.

Basic training for using computer programs, software, or web tools for Chinese word processing. Prerequisite: CHIN 1001. Laboratory fee.

CHIN 2003. Intermediate Chinese I. 4 Credits.

Continuation of grammar, with emphasis on speaking, reading, and writing. Prerequisite: CHIN 1002 or CHIN 1011. Laboratory fee.

CHIN 2004. Intermediate Chinese II. 4 Credits.

Continuation of CHIN 2003. Continuation of grammar, with emphasis on speaking, reading, and writing. Prerequisite: CHIN 2003. Laboratory fee.

CHIN 3105. Intermediate Chinese III. 3 Credits.

Augmentation of vocabulary, with emphasis on communicative proficiency development. Prerequisite: CHIN 2004. Laboratory fee.

CHIN 3106. Intermediate Chinese IV. 3 Credits.

Continuation of CHIN 3105. Augmentation of vocabulary, with emphasis on communicative proficiency development. Prerequisite: CHIN 3105. Laboratory fee.

CHIN 3109. Introduction to Classical Chinese. 3 Credits.

Introduction to classical writings in Chinese literature, history, and philosophy. Prerequisite: CHIN 2004.

CHIN 3110. Introduction to Classical Chinese. 3 Credits.

Continuation of CHIN 3109. Introduction to classical writings in Chinese literature, history, and philosophy. Prerequisite: CHIN 2004.

CHIN 3111. Chinese Literature in Translation. 3 Credits.

An introductory survey of Chinese literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The pre-modern period.

CHIN 3112. Chinese Literature in Translation. 3 Credits.

Continuation of CHIN 3111. An introductory survey of Chinese literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The modern period.

CHIN 3123. Introduction to Chinese Linguistics. 3 Credits.

The structure of the Chinese language, including such topics as the structure of sounds and words, sentence meaning and structure, the writing system, adaptation of foreign vocabulary, pragmatics, variation, and change. Course conducted in English.

CHIN 3124. Introduction to Chinese Linguistics. 3 Credits.

Continuation of CHIN 3123. The structure of the Chinese language, including such topics as the structure of sounds and words, sentence meaning and structure, the writing system, adaptation of foreign vocabulary, pragmatics, variation, and change. Course conducted in English.

CHIN 3136. Chinese Women in Myth, Literature, and Film. 3 Credits.

Women's position in Chinese cultural and political life from prehistoric myth to the present time. Confucian writing, traditional theatre, and films and novels set in China. A general survey of Chinese history establishes the context for discussions of cultural and political phenomena, such as foot binding and the one-child policy. Course conducted in English. Same as WSTU 3136.

CHIN 3136W. Chinese Women in Myth, Literature, and Film. 3 Credits.

Women's position in Chinese cultural and political life from prehistoric myth to the present time. Confucian writing, traditional theatre, and films and novels set in China. A general survey of Chinese history establishes the context for discussions of cultural and political phenomena, such as foot binding and the one-child policy. Course conducted in English. Same as WSTU 3136.

CHIN 3162. Chinese Culture Through Film. 3 Credits.

Survey of the Chinese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from prehistorical times to the modern era. Course conducted in English.

CHIN 3163. Taiwanese Literature and Film. 3 Credits.

A introductory survey of modern and contemporary Taiwanese literary and cinematic works. Readings include poetry, folk lyrics, dramas, novels, and memoirs that bear distinctive marks of Taiwan's diverse literary trends. Films include those by internationally renowned directors such as Hou Hsiao-hsien, Ang Lee, Edward Yang, and Tsai Ming-liang. (Spring, odd years).

CHIN 3171. Poetry of the Tang and Song Periods. 3 Credits.

Reading of works of leading poets. Discussion of content and style. Prerequisite: CHIN 3109 .

CHIN 3172. Poetry of the Tang and Song Periods. 3 Credits.

Continuation of CHIN 3171. Reading of works of leading poets. Discussion of content and style. Prerequisite: CHIN 3109.

CHIN 3173. Chinese Drama and Theatre. 3 Credits.

Chinese drama and theatrical genres. Topics include the relation between theatrical performance and ritual practice, gender identities, and cross-cultural exchange. Course conducted in English.

CHIN 3188. Confucian Religion. 3 Credits.**CHIN 3841. Religion in Modern China. 3 Credits.**

The changes, destructions, and reconstructions of Chinese religions from the late 19th century to the present day. The relationship between the (re)making of Chinese religions and the making of a modern Chinese nation-state. Same as REL 3841.

CHIN 4107. Readings in Modern Chinese I. 3 Credits.

Readings in newspapers, social science materials, and documentary materials. Prerequisite: CHIN 3106 .

CHIN 4108. Readings in Modern Chinese. 3 Credits.

Continuation of CHIN 4107. Readings in newspapers, social science materials, and documentary materials. Prerequisite: CHIN 4107 or equivalent. (Spring).

CHIN 4119. Business Chinese. 3 Credits.

Basics of business-related communication in both oral and written form. Integrated language skills. Prerequisite: CHIN 4107 or CHIN 4121 preparation approved by the instructor.

CHIN 4119W. Business Chinese. 3 Credits.

Basics of business-related communication in both oral and written form. Integrated language skills. Prerequisite: CHIN 4107 or CHIN 4121 preparation approved by the instructor.

CHIN 4121. Advanced Conversation and Composition I-II. 3 Credits.

Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: CHIN 3106 and permission of instructor.

CHIN 4121W. Advanced Conversation and Composition I. 3 Credits.

Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: CHIN 3106 and permission of instructor.

CHIN 4122. Advanced Conversation and Composition I-II. 3 Credits.

Continuation of CHIN 4121. Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: CHIN 4121 and permission of instructor.

CHIN 4122W. Advanced Conversation and Composition II. 3 Credits.

Continuation of CHIN 4121. Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: CHIN 4121 and permission of instructor.

CHIN 4179. 20th-Century Chinese Literature. 3 Credits.

Selected works of major 20th-century writers, including Lu Xun, Lao She, Zhang Ailing, Bai Xianrong, and others. Lectures and discussion in Chinese. Prerequisite: CHIN 4107 .

CHIN 4180. 20th-Century Chinese Literature. 3 Credits.

Continuation of CHIN 4179. Selected works of major 20th-century writers, including Lu Xun, Lao She, Zhang Ailing, Bai Xianrong, and others. Lectures and discussion in Chinese. Prerequisite: CHIN 4107 .

CHIN 4180W. 20th-Century Chinese Literature II. 3 Credits.

Continuation of CHIN 4179. Selected works of major 20th-century writers, including Lu Xun, Lao She, Zhang Ailing, Bai Xianrong, and others. Lectures and discussion in Chinese. Prerequisite: CHIN 4107 .

CHIN 4185. Directed Reading I. 3 Credits.

Reading of material in the student's field of interest. Admission by permission of instructor.

CHIN 4186. Directed Reading II. 3 Credits.

Continuation of CHIN 4185. Reading of material in the student's field of interest. Admission by permission of instructor.

CHIN 4186W. Directed Reading II. 3 Credits.

Continuation of CHIN 4185. Reading of material in the student's field of interest. Admission by permission of instructor.

CHIN 4198. Proseminar: Readings for the Major in Chinese Language and Literature. 3 Credits.

Recommended for all majors. Preparation for advanced research in Chinese sources. One-on-one tutorials, seminar meetings, and practice in consulting Chinese reference works, both traditional and modern. Literary criticism; keeping abreast of sinological scholarship. Prerequisite: CHIN 3106.

CHIN 4199. Proseminar: Readings for the Major in Chinese Language and Literature. 3 Credits.

Continuation of CHIN 4198. Recommended for all majors. Preparation for advanced research in Chinese sources. One-on-one tutorials, seminar meetings, and practice in consulting Chinese reference works, both traditional and modern. Literary criticism; keeping abreast of sinological scholarship. Prerequisite: CHIN 4198.

CHIN 6109. Introduction to Classical Chinese. 3 Credits.

Students explore the basic grammar and vocabulary of literary Chinese. Selections are based on the students' interests and level of proficiency, and will include such genres as prose, short stories, performance texts, ci poetry and qu. Graduate students who are taking 6109 will demonstrate their problem-solving and reading abilities through a 15-20 annotated translation at the end of the semester. Prerequisites: CHIN 2004 or equivalent. (Same as CHIN 3109) (Fall).

CHIN 6110. Introduction to Classical Chinese. 3 Credits.

Students explore the basic grammar and vocabulary of literary Chinese. Selections are based on the students' interests and level of proficiency, and will include such genres as prose, short stories, performance texts, ci poetry and qu. Graduate students who are taking 6109-6110 will demonstrate their problem-solving and reading abilities through a 15-20 annotated translation at the end of the semester. Prerequisites: CHIN 2004 or equivalent. (Same as CHIN 3110) (Spring).

CHIN 6111. Chinese Literature in Translation. 3 Credits.

A survey of the literatures and cultures of pre-modern China, from the origin of Chinese civilization through the last imperial dynasty including the works of representative writers as well as major literary modes, such as historical documents, philosophical writings, poetry, folktale, short story, drama, and novel. Graduate students taking CHIN 6111 will demonstrate their ability in conducting independent research by writing a 15-20 page research paper.

CHIN 6112. Chinese Literature in Translation. 3 Credits.

A survey of the literatures and cultures of China, from late Qing (the last imperial dynasty) to contemporary China and the Chinese-speaking world. Students will be introduced to works of representative writers as well as major literary genres, including fictions, poetry, dramas, and essays. Students taking CHIN 6112 will develop the ability to conduct independent research on the primary text, and to evaluate the significance of the works in cross-cultural, comparative context, by writing a 15-20 page term paper. (Same as CHIN 3112) (Spring).

CHIN 6123. Structure of Chinese. 3 Credits.

Introduction to the structure of Chinese from the perspective of linguistic analysis; serves to prepare students for more advanced graduate level courses in Chinese linguistics. Coursework includes introductory readings, readings from the primary linguistics research literature, and hands-on problem solving, etc. (Fall).

CHIN 6125. History of the Chinese Language. 3 Credits.

The methodologies and theories in Chinese historical phonology and syntax. Students will read materials in the original language, e.g. Classical Chinese, Vernacular writing, and etc. Students will work towards a term research paper throughout the semester on a topic of their own choice. For graduate students, there will be one extra question on all of the assignments throughout the semester including the homework problem sets, midterm exams and final exam. (Spring, odd years).

CHIN 6126. Chinese Phonology. 3 Credits.

The theory and practice in Chinese phonology. Students will be provided with fundamentals of articulatory phonetics (the study of how speech sounds are produced) and phonology (the study of sound systems), which they apply to the study of phonetic and phonological properties of standard Chinese. Prerequisites: CHIN 1001 or equivalent. (Spring, even years).

CHIN 6128. Chinese Semantics. 3 Credits.

The formal approaches to semantics and interface issues between semantics and syntax and phonology, with an emphasis on aspects related to Chinese, such as quantificational isomorphism, modality, focus, question semantics, adjectival semantics and etc. Graduate students taking this course will turn in a research paper by the end of the semester to demonstrate their understanding of a certain topic and ability to do independent research. (Fall, odd years).

CHIN 6171. Poetry of the Tang and Song Periods. 3 Credits.

Introduction to the world of Chinese poetry; examination of exemplary works of leading Tang and Song poets. Students will be reading and interpreting works by Li Bo, Du Fu, Han Shan, Du Xunhe, and Bai Juyi. Through individual and collaborative analytical exercises, students will become familiar with styles and aesthetic features of Tang and Song poetry. Students will be assigned a translation project: they will select a single classical poet, and translate a selection of poems by that poet into English, with full annotations. Undergraduate students are allowed by instructor approval. Prerequisites: CHIN 3109 or equivalent. (Fall).

CHIN 6172. Poetry of the Tang and Song Periods. 3 Credits.

This course introduces students to the world of Chinese poetry by examining exemplary works of leading Tang and Song poets. Students will be reading and interpreting works by Li Bo, Du Fu, Han Shan, Du Xunhe, and Bai Juyi. Class work includes lectures by the instructor but emphasizes student participation through means such as guided translation, text recitation, and students' presentations. Through individual and collaborative analytical exercises, students will become familiar with styles and aesthetic features of Tang and Song poetry. Students who take 6171-6172 will be assigned a translation project: they will select a single classical poet, and translate a selection of poems by that poet into English, with full annotations. Undergraduate students are allowed by instructor approval. Prerequisites: CHIN 3109 or equivalent. (Spring).

CHIN 6173. Traditional Chinese Theatre and Drama. 3 Credits.

Traditional Chinese Theatre and Drama is a multimedia-enhanced course, which examines dramas and theatrical genres of China of pre-modern time. Students will be introduced to the history of Chinese theatre, the aesthetics of theatrical performances, as well as works of representative playwrights in major dramatic genres. Students will develop the ability to conduct independent research by writing a 15-20-page research paper on the primary text, and to evaluate the significance of the works in cross-cultural, comparative context. Undergraduate students are allowed by instructor approval. (Fall).

CHIN 6179. 20th Century Chinese Literature I. 3 Credits.

Introduction to modern Chinese literature through close reading and discussion of representative literary works from the era. The readings will include several genres such as essay, poetry, short story, and novella. All readings and class discussion will be in Chinese. Graduate students taking CHIN 6179 will demonstrate their ability in conducting independent research by writing a 15-20 page research paper. Undergraduate students are allowed only by instructor approval. Prerequisites: CHIN 4107 or equivalent. (Fall).

CHIN 6180. 20th-Century Chinese Literature II. 3 Credits.

Introduction to the literature of 20th century China through close reading and discussion of representative literary works from the era. All readings and class discussion are in Chinese. Graduate students taking CHIN 6179 will demonstrate their ability in conducting independent research by writing a 15-20 page research paper. Undergraduate students are allowed only by instructor approval. Prerequisites: CHIN 4107 or equivalent. (Spring).

CHIN 6199. Graduate Seminar. 3 Credits.

Preparation for advanced research in Chinese sources. One-on-one tutorials, seminar meetings, and practice in consulting Chinese reference works, both traditional and modern. Literary criticism; keeping abreast of sinological scholarship. Students will do research on a selected topic in Chinese literature or philosophy, and prepare a research paper of 25 or more pages on this topic. Restricted to individualized curriculum; admission by instructor approval. (Fall and spring).

CHIN 6201. Second Language Acquisition of Mandarin Chinese. 3 Credits.

This course is an overview of, and introduction to, the theoretical foundations of second language (L2) acquisition in general and the acquisition of Chinese as a foreign language in particular. It is designed to deepen the understanding of the Chinese language from the perspective of L2 learners. Research papers focusing on the L2 acquisition of Mandarin Chinese from various perspectives, such as psycholinguistics, cognitive linguistics, pedagogical theories, will be introduced in this class. (Spring, even years).

CHIN 6210. Introduction to Teaching Chinese as a Foreign Language. 3 Credits.

Gain knowledge of TCFL essentials including Chinese pedagogical grammar, instructional design, technology application, and testing and assessment. Discuss National Standards and assessment guidelines for proficiency development, and current studies of second language acquisition (SLA). Examine key issues, studies, and practices on the teaching and acquisition of difficult areas of Chinese, such as the pronunciation and writing systems, as well as topics of general interest. Explore language-teaching methodologies and techniques, and Chinese language testing and assessment. Admission by permission of instructor. (Fall).

CHIN 6310. Practicum in Chinese Language Instruction. 3 Credits.

Develop basic skills for teaching Chinese as a foreign language (TCFL) through classroom observation, group discussion, lesson planning, syllabus writing, test designing, and supervised field experience in Chinese instruction. Gain knowledge of classroom management. Required seminar and practice sessions. Admission by permission of instructor. Prerequisites: CHIN 6210 or permission of instructor. (Fall, odd years).

CHIN 6998. Thesis Research. 3 Credits.**CHIN 6999. Thesis Research. 3 Credits.**

CIVIL ENGINEERING (CE)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CE 1010. Introduction to Civil and Environmental Engineering. 1 Credit.

An introduction to the profession of civil and environmental engineering. Field visits and laboratory exercises complement classroom instruction. (Fall).

CE 1020. Introduction to a Sustainable World. 1 Credit.

The science underlying the basic processes that gave rise to the world we live in and that maintain its viability for human life. Ecosystem-functioning environmental issues, such as greenhouse gas emission and ozone, with current efforts to resolve them. Technological innovations in the context of sustainability.

CE 1098. Variable Topics. 1-36 Credits.

CE 2210. Engineering Computations. 3 Credits.

Numerical methods for engineering applications. Methods for solving systems of linear equations, root finding, curve fitting, and data approximation. Numerical differentiation and integration and numerical solution of differential equations. Computer applications. Prerequisites: CSCI 1121, APSC 2113. (Spring).

CE 2220. Introduction to the Mechanics of Solids. 3 Credits.

Stress and strain, axial load problems, torsion, shear force and bending moment, pure bending of beams, shearing stresses in beams, compound stresses, analysis of plane stress and plane strain, combined stresses, deflection of beams, statically indeterminate problems, columns, energy methods. Prerequisite: APSC 2057, APSC 2113.

CE 2510. Environmental Sustainability. 3 Credits.

An introduction to environmental sustainability with focus on the nexus of water, energy, and climate; energy demands of water systems, water footprints of energy generation, and how the two valuable resources are limiting each other; technologies and research frontiers toward a sustainable water and energy supply.

CE 2710. Introduction to Transportation Engineering. 3 Credits.

An introduction to environmental sustainability with focus on the nexus of water, energy, and climate; energy demands of water systems, water footprints of energy generation, and how the two valuable resources are limiting each other; technologies and research frontiers toward a sustainable water and energy supply.

CE 3110W. Civil Engineering Materials. 2 Credits.

Mechanical properties and behavior of civil engineering materials such as metals, concrete, and fiber-reinforced polymer composites. Properties range from plastic deformations of metallic materials to crushing of confined and unconfined concrete. Basis of the strength of materials. Concepts of creep, fatigue, fracture, and crack propagation. Prerequisite: CE 2220. (Fall).

CE 3111W. Civil Engineering Materials Lab. 1 Credit.

Measurement of stress-strain characteristics and study of failure modes in ductile steel, brittle concrete, and anisotropic composite materials. Experiments include data collection, data analysis, and interpretation and presentation of results regarding tension, compression, bending, impact, and shear properties. Prerequisite or corequisite: CE 3110W. Prerequisites: CE 3110W. (Fall).

CE 3140. Sustainability in Engineering Materials. 2 Credits.

Sustainable engineering: overall materials energy needs/properties and impacts; load resistance and aging, thermodynamics, water conservation, heat transfer, use of energy-efficient materials in construction, life-cycle assessment. Prerequisite: CE 3110, CE 3111.

CE 3230. Structural Theory I. 3 Credits.

Theory of statically determinate structures; stability and determinacy; influence lines and moving loads. Analysis of beams, frames, trusses, and arches. Calculation of deflections. Prerequisites: CE 2210, CE 2220. (Fall).

CE 3240. Structural Theory 2. 3 Credits.

Theory of statically indeterminate structures using matrix methods and classical approaches such as moment distribution and slope-deflection; influence lines; energy methods. Prerequisite: CE 3230.

CE 3310. Reinforced Concrete Structures. 3 Credits.

Properties of concrete and reinforcement; design of flexural reinforcement, shear reinforcement; development of reinforcement; design of columns, floor slabs; ethics and professionalism in design. A design project, including the use of computer software and a detailed report, is required. Prerequisite or corequisite: CE 3240.

CE 3520. Environmental Engineering I: Water Resources and Water Quality. 3 Credits.

Physical and chemical analyses of water quality and characteristics. Microbiology of water and pathogens. Introduction to water treatment processes involving coagulation, flocculation, filtration, and disinfection. Prerequisite or corequisite: CE 3610.

CE 3521. Environmental Engineering Laboratory. 1 Credit.

Laboratory experiments for physical and chemical analyses of water and wastewater. Measurement of turbidity, alkalinity, dissolved oxygen, BOD, COD, suspended solids, and optimum coagulant dose using jar tests. Corequisite: CE 3520.

CE 3610. Hydraulics. 3 Credits.

Fluid statics: pressure forces, buoyancy, and flotation. Application of kinematic principles; flow fields, stream tubes, and flow nets. Fluid dynamics: applications to pipe flow, hydraulic models, measurement of pressure, and velocity. Open channel flow: applications to water resources engineering. Prerequisite: MAE 3126.

CE 3611. Hydraulics Laboratory. 1 Credit.

Laboratory experiments and demonstrations of hydraulics in pipe and open-channel flow. Topics include center of pressure, floating bodies, Bernoulli's theorem, discharge coefficients, velocity profile, and head losses. Prerequisite or corequisite: CE 3610.

CE 3720. Highway Engineering and Design. 3 Credits.

Road vehicle performance. Principles of highway design: horizontal and vertical alignments, roadside design; drainage and drainage structures, earthwork, intersections, interchanges, parking facilities; basic traffic models; highway materials. Application of safety standards. Prerequisite: MATH 2233; prerequisite or corequisite: APSC 3115 and CE 2220.

CE 3730. Sustainable Urban Planning Dynamics. 3 Credits.

Human and physical processes shaping urban environments; human-environment interactions in the context of an urban region; urban design, materials, transport, planning, and regulation. Prerequisite: CE 2710.

CE 4320. Metal Structures. 3 Credits.

Principles of the design of metal structures, structural elements, connections, specific problems of analysis including the use of computer software, methods of construction, professionalism in design. Prerequisite: CE 3240.

CE 4330. Contracts and Specifications. 3 Credits.

Law of contracts, construction contracts, specifications, bidding, insurance and bonds, professional liability, arbitration of disputes, litigation. Restricted to junior standing. (Spring).

CE 4330W. Contracts and Specifications. 2 Credits.

Law of contracts, construction contracts, specifications, bidding, insurance and bonds, professional liability, arbitration of disputes, litigation. Prerequisite: junior standing.

CE 4340. Design and Cost Analysis of Civil Engineering Structures. 0-3 Credits.

Total structural systems concepts. Design of civil engineering structures such as piers, wharves, bulkheads, offshore platforms, dams, and other special structures. Principles of cost analysis for timber, steel, and reinforced concrete structures. Project and report are required. Prerequisites: CE 3310, CE 4320, CE 4410. (Spring).

CE 4410. Introduction to Geotechnical Engineering. 3 Credits.

Soils and rock formation, soil composition, permeability, seepage and flow net analysis, stresses in soil medium, consolidation and settlement, shear strength of soil, analysis of lateral earth pressures, soil compaction. Prerequisite: CE 2220, MAE 3126.

CE 4411. Geotechnical Engineering Laboratory. 1 Credit.

Laboratory experiments to evaluate liquid and plastic limits, grain-size distribution, shear strength, compressibility, permeability, and moisture-density relationship of soils. Prerequisite or corequisite: CE 4410.

CE 4450. Introduction to Geo-environmental Engineering. 3 Credits.

Soils and rock formation, soil composition, permeability, seepage and flow net analysis, stresses in soil medium, consolidation and settlement, shear strength of soil, analysis of lateral earth pressures, soil compaction. Prerequisite: CE 2220, MAE 3126.

CE 4530. Environmental Engineering II: Water Supply and Pollution Control. 3 Credits.

Introduction to wastewater treatment systems including clarification, suspended and attached growth processes. Use of dissolved oxygen models. Water supply and wastewater collection systems, applied hydraulics of pipelines and pumps. Planning to meet quality needs and regulatory requirements. Prerequisite: CE 3520.

CE 4620. Hydrology and Hydraulic Design. 3 Credits.

Descriptive hydrology: hydrologic cycle, precipitation, stream flow, evaporation, and transpiration. Quantitative hydrology: hydrograph analysis, hydrographs of basin outflow, storage routing. Probability concepts in hydrology: flood frequency, rainfall frequency, stochastic hydrology. Culverts and stilling basins. Prerequisite or corequisite: APSC 3115, CE 3610.

CE 4810. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

CE 4820. Special Topics. 1-6 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

CE 6101. Numerical Methods in Engineering. 3 Credits.

Eigenvalue problems. Numerical solution of systems of equations and ordinary differential equations. Solution techniques for elliptic, parabolic, and hyperbolic partial differential equations. Numerical methods for solving finite element equations. Introduction to solution of fluid-flow problems. Prerequisite: CE 2210.

CE 6102. Application of Probability Methods in Civil Engineering. 3 Credits.

Uncertainty in real-world information; basic probability concepts and models; random variables; useful probability distributions, statistical estimation of distribution parameters from observed data; empirical determination of distribution models; testing hypothesis; regression and correlation analyses; decision theory. Prerequisite: APSC 3115.

CE 6201. Advanced Strength of Materials. 3 Credits.

Deflection of beams using singular functions, unsymmetrical bending of beams, beams on elastic foundation. Beam-column problems, shear center for thin-walled beam cross sections, curved beams. Applications of energy methods, torsion, basic equations for theory of elasticity, thin- and thick-walled cylinders, stress concentration, and failure criteria. Prerequisites: CE 2220, CE 3240. (Spring).

CE 6202. Methods of Structural Analysis. 3 Credits.

Modern methods of analysis of statically indeterminate structures, matrix analysis based on flexibility, stiffness, energy and variational methods, substructuring techniques; consideration of plastic collapse of structures; introduction to the finite element method. Prerequisites: CE 2220, CE 3240. (Fall).

CE 6203. Reliability Analysis of Engineering Structures. 3 Credits.

Probability theory, theory of structural reliability, probabilistic analysis of strength and loads, risk and reliability function, empirical distribution, probability plot. The design service life, method of perturbation, Monte Carlo simulation. Fatigue and fracture, proof testing, inspection and repair-replacement maintenance. Prerequisite: APSC 3115.

CE 6204. Analysis of Plates & Shells. 3 Credits.

Bending and stretching of thin elastic plates under loading with various boundary conditions, continuous plates and plates on elastic foundations, theory of folded-plate structures. Theory of curved surfaces; general linear bending theory and its simplification to membrane theory; bending stresses in shells of revolution, shallow-shell theory. Prerequisites: CE 2220, CE 3240. (Spring, odd years).

CE 6205. Theory of Structural Stability. 3 Credits.

General criteria for stability, buckling of elastic and inelastic columns and frames, torsional and lateral buckling, variational methods. Buckling of plates and shells under static loads, stability of stiffened structures, effect of imperfections and boundary conditions. Prerequisites: CE 2220, CE 3240. (Fall).

CE 6206. Continuum Mechanics. 3 Credits.

Introduction to the mechanics of continuous media. Tensor calculus; kinematics; stress and stress rate, conservation of mass, conservation of linear and angular momentum, energy balance, second law of thermodynamics; constitutive theory; linear and nonlinear elasticity, newtonian fluids, micropolar elasticity. Prerequisites: CE 2220. (Fall, spring, and summer, even years).

CE 6207. Theory of Elasticity I. 3 Credits.

Introduction to Cartesian tensors; deformation, stress, constitutive relations for linear elasticity; formulation of boundary value problems, variational principles, torsion and bending of prismatic rods, plane problems. Prerequisites: CE 2220. (Same as MAE 6207) (Spring).

CE 6208. Plasticity. 3 Credits.

Introduction to the continuum theory of plastic deformation. Physical basis of rate-independent plasticity. Concepts of yield, strain hardening and softening, reverse yield, and cyclic plasticity. Constitutive equations describing plastic deformation. Prerequisite: CE 6201 or CE 6206.

CE 6209. Mechanics of Composite Materials. 3 Credits.

Stress-strain relationship for orthotropic materials, invariant properties of an orthotropic lamina, biaxial strength theory for an orthotropic lamina. Mechanics of materials approach to stiffness, elasticity approach to stiffness. Classical lamination theory, strength of laminates. Statistical theory of fatigue damage. Same as MAE 6233. Prerequisite: CE 3240.

CE 6210. Introduction to Finite Element Analysis. 3 Credits.

Calculus of variations. Variational formulation of the finite element method. Weighted residual techniques. Computer implementation of the finite element method. Application to problems in heat transfer, stress analysis, fluid flow, and structural analysis. Prerequisites: proficiency in one computer language, CE 2220, CE 3240. (Fall).

CE 6301. Design of Reinforced Concrete Structures. 3 Credits.

Structural behavior of reinforced concrete structures, ultimate strength and deformation characteristics; design of structural components including beams, columns, floor slabs, deep beams, corbels, and composite slab/beam systems. Prerequisite: CE 3310.

CE 6302. Prestressed Concrete Structures. 3 Credits.

Structural behavior and failure modes of prestressed concrete structures; design in prestressed concrete, including long-span structures, bridges, and precast systems. Prerequisite: CE 3310.

CE 6310. Advanced Reinforced Concrete Structures. 3 Credits.

Conception, analysis, and design of low-rise and high-rise buildings by ultimate-strength methods, precast systems, progressive collapse, earthquake considerations, domes, folded plates, shell-type structures, and special topics. Prerequisite: CE 6301.

CE 6311. Bridge Design. 3 Credits.

Application of basic design procedures for reinforced and prestressed concrete bridges, according to AASHTO bridge specifications. Various types of concrete bridges, design superstructure bridge elements (deck slab, girders, bearing pads), and development of superstructure/substructure details. Prerequisite: CE 6302.

CE 6320. Design of Metal Structures. 3 Credits.

Structural behavior of metal structures and composite girders. Conception, analysis, and design of low-rise and high-rise buildings by elastic and inelastic methods. Earthquake considerations and special topics. Prerequisite: CE 4320.

CE 6321. Advanced Metal Structures. 3 Credits.

Conception and design of advanced structural components and systems, hysteretic behavior, plastic design principles, box-type girders, cable systems, and unique structural systems. Prerequisite: CE 6320. (As arranged).

CE 6340. Structural Dynamics. 3 Credits.

Vibration of continuous systems: membranes, beam plates, and shells; approximate methods of vibration analysis; methods of integral transform; analysis of nonlinear systems; wave propagation. Prerequisites: APSC 2058, CE 3240. (Fall, odd years).

CE 6341. Random Vibration of Structures. 3 Credits.

Introduction to random processes, responses of linear structures to stationary and nonstationary random inputs. Structural responses to earthquakes, waves, boundary-layer turbulences, wind loads, etc. Failure analysis of structures under random loads. Prerequisites: APSC 3115, CE 6340. (Spring, even years).

CE 6342. Structural Design to Resist Natural Hazards. 3 Credits.

Prediction of forces due to earthquakes and strong winds; generalized codes; pseudostatic methods for preliminary design; codes based on spectra, energy absorption and ductility; influence of foundations; ground failures; static and aeroelastic effects of strong winds. Design project. Prerequisites: CE 3240, CE 4340, either CE 6340 or CE 6701. (Spring).

CE 6350. Intro to Biomechanics. 3 Credits.

Fundamentals of continuum mechanics as they apply to biological materials: concepts of stress, strain, and equilibrium; elastic and viscoelastic properties of solids; physiological fluid mechanics and bioheat and mass transfer. Fundamentals of solid mechanics of soft tissues and bone structures. Development of computer models and applications. Prerequisite: CE 2220.

CE 6401. Fundamentals of Soil Behavior. 3 Credits.

Soil mineralogy, clay-water-electrolyte systems, soil composition, fabric, structure, volume change behavior, permeability, coupled phenomena, in-situ evaluation of soil behavior. Prerequisite: CE 4410.

CE 6402. Theoretical Soil Mechanics. 3 Credits.

Porous media, stress-strain behavior of soil skeleton, elastic and elastoplastic models for soil behavior, critical state concept, cam clay, strength of soils, stress-dilatancy, stress paths. (Fall, odd years).

CE 6403. Geotechnical Engineering. 3 Credits.

Principles of soil mechanics applied to the analysis and design of mat foundations, pile foundations, retaining structures including sheeting and bracing systems, and waterfront structures. Foundations on difficult soils and reinforced earth structures. Prerequisite: CE 4410.

CE 6404. Geotechnical Earthquake Engineering. 3 Credits.

Ground motion, wave propagation, foundation isolation, site response analysis, seismic stability of retaining structures, soil structure interaction. Prerequisite: graduate standing.

CE 6405. Rock Engineering. 3 Credits.

Classification and properties of rock; nature of rock masses and rock discontinuities; field exploration; methods of excavation; design and applications to foundation slopes, tunnels, and chambers in rock. Prerequisite: CE 4410.

CE 6501. Environmental Chemistry. 3 Credits.

Principles of chemistry of natural waters, water supplies, wastewaters, hazardous wastes. Stoichiometry, equilibrium, solubility, kinetics, organic chemistry, biochemistry, analytical techniques. Examples from water/wastewater practice to illustrate applications. Prerequisites: CHEM 1111, CHEM 1112. (Fall).

CE 6502. Advanced Sanitary Engineering Design. 3 Credits.

Elements of design including basic parameters and hydraulic requirements. Layout and design of water supply and wastewater systems, pumping stations, and treatment plants. Plant expansions and modifications. Prerequisite: CE 4530.

CE 6503. Principles of Environmental Engineering. 3 Credits.

Basic concepts of water, air, and terrestrial environments and interrelationships among them. Principles of environmental chemistry and microbiology. Assessment of environmental quality and impacts. Environment and health. Water and wastewater systems. Legal and regulatory controls. Prerequisites: CE 3520. (Fall).

CE 6504. Water and Wastewater Treatment Processes. 3 Credits.

Theory and application of commonly used processes. Sedimentation, coagulation, filtration, disinfection, gas transfer, activated sludge, trickling filters, oxidation ponds, sorption, and sludge stabilization and disposal. Process combinations to produce treatment systems. Prerequisite: CE 6503.

CE 6505. Environmental Impact Assessment. 3 Credits.

Public policy and legislation on environmental quality. Methods for assessing impacts of engineering projects. Technology for assessing impacts on air, water, and land environments, applied to transportation facilities, water and wastewater facilities, industrial and community development. Prerequisites: CE 3520. (Fall).

CE 6506. Microbiology for Environmental Engineers. 3 Credits.

Principles and applications of advanced treatment systems for water, wastewater, and hazardous wastes, including: biological nutrient removal, oxidation-reduction processes, stripping, sorption, membrane processes, chemical precipitation, others. Prerequisites: CE 3520. (Spring, even years).

CE 6507. Advanced Treatment Processes. 3 Credits.

Principles and applications of advanced treatment systems for water, waste-water, and hazardous wastes, including: biological nutrient removal, oxidation-reduction processes, stripping, sorption, membrane processes, chemical precipitation, others. Prerequisite: CE 6504.

CE 6508. Industrial Waste Treatment. 3 Credits.

Types of industries, waste sources. Characteristics, measurements, and evaluation. Minimization and reuse. Treatment process selection, development, and design. Regulations, permits, standards, monitoring, and pretreatment. (Fall).

CE 6509. Introduction to Hazardous Wastes. 3 Credits.

Regulations, including RCRA and Superfund. Transport and fate of hazardous substances. Elements of environmental toxicology, risk assessment, and hazard ranking. Monitoring, data collection, and evaluation. Waste minimization. Case histories. Prerequisites: CE 3520. (Spring).

CE 6601. Open Channel Flow. 3 Credits.

Types and regimes of flow; energy and momentum principles, uniform flow, gradually varied flow, spatially and rapidly varied flow. Flow in nonprismatic channels. Unsteady flow; dam break problem, flood routing. Prerequisite: CE 3610.

CE 6602. Hydraulic Engineering. 3 Credits.

Hydraulic design of conveyance, regulating, and measurement structures. Design for spillways, energy dissipators, inlet and outlet works related to dams. Forces on hydraulic structure and stability analysis. Hydraulic turbines and pumps. Design considerations for flow through pipes. Transients and cavitation. Prerequisite: CE 3610.

CE 6603. Design of Dams. 3 Credits.

Project planning and investigations. Types of dams; design of earth-rock fill dams; stability analysis, foundation treatment, wind-wave protection. Construction methods for dams. Reservoir sedimentation. Safety inspection of dams. Prerequisite: CE 3610.

CE 6604. Advanced Hydrology. 3 Credits.

Precipitation, evaporation, and transpiration. Soil physics; stream flow, drainage basins, hydrograph analysis, and stream-flow routing. Design criteria, flood frequency statistics and analysis, flood forecasting and control, water supply forecasting. Prerequisite: CE 4620.

CE 6605. Ground Water and Seepage. 3 Credits.

Permeability theory of groundwater flow, flow nets, analogs, computer solutions; applications to engineering problems such as excavation dewatering, flow through dams, stabilization of earth slopes. Prerequisites: CE 4410. (Spring).

CE 6606. Mechanics of Water Waves. 3 Credits.

Irrrotational theory for deep- and shallow-water waves, reflexion, refraction, diffraction, attenuation. Water waves of finite amplitude: shallow-water theory, tides, bores, long-waves theory, conoidal and solitary waves. Wave generation by wind. Wave breaking and reflexion. Prerequisite: APSC 6213 and permission of instructor.

CE 6607. Water Resources Planning and Control. 3 Credits.

The parameters of water resources planning and control, economics of water resources and related natural resources, economics of water-quality control, physical parameters of water resource development, water resources law. Prerequisite: approval of department.

CE 6608. Hydraulic Modeling. 3 Credits.

Dimensional analysis and similitude. Types of models—physical, mathematical. Distortions in physical models. Erodible bed models. Prerequisite: CE 3610.

CE 6609. Numerical Methods in Environmental and Water Resources. 3 Credits.

Use of microcomputers in water resources. Elements of finite difference schemes, basic operations, convergence, stability, and consistency. Nonuniform flow and error analysis; unsteady laminar flow; diffusion problems; unsteady flow in open channels; water hammer, seepage flow, and diffusion-dispersion problems. Prerequisites: CE 2210, MAE 3126. (Spring).

CE 6610. Pollution Transport Systems. 3 Credits.

Distribution of pollutants in natural waters and atmosphere, diffusive and advective transport, mathematics for stream pollutant deoxygenation rates, groundwater pollution transport, sediment transport, thermal transport, numerical simulation of pollutant transports in streams and estuaries. Prerequisite: CE 3610, MAE 2131.

CE 6701. Analytical Mechanics. 3 Credits.

Fundamental principles, particle and rigid-body dynamics, generalized coordinates, variational principles and Lagrange's equations, nonholonomic systems, Hamilton's equations, theory of small oscillations. Prerequisites: APSC 2058, APSC 2113. (Fall).

CE 6702. Vehicle Dynamics. 3 Credits.

Engineering principles and analytical methods explaining the performance of an automotive vehicle. Basic mechanics governing vehicle dynamic performance in longitudinal, ride, and handling modes. Engineering analysis techniques applied to basic systems and subsystems to derive the governing equations. Prerequisite or corequisite: CE 6701. Prerequisites: CE 6701 (either prerequisite or corequisite). (Spring, even years).

CE 6703. Vehicle Standards and Crash Test Analysis. 3 Credits.

Safety mandates and comparison of motor vehicles based on U.S. and European safety standards. Characteristics of dummies and mechanical devices specified for crash testing. U.S. national accident and injury data; calculation of benefits of safety measures. Prerequisites: APSC 2058, CE 2220. (Fall).

CE 6704. Crash Investigation and Analysis. 3 Credits.

Crash reconstruction methods for systematic investigation of vehicle crashes. Analysis of vehicle safety systems and their effectiveness; computer simulation and analysis of crash data; sensitivity of analytical techniques; case investigations. Prerequisites: APSC 2058, APSC 3115, CE 2220. (Spring).

CE 6705. Nonlinear Finite Element Modeling and Simulation. 3 Credits.

Rigid and flexible body methods for modeling crashes. Application of dynamic nonlinear finite element methods with contact algorithms for modeling crash phenomena. Modeling and simulation of vehicles, airbags, safety restraining systems, and highway barriers. (Spring).

CE 6706. Pavement & Runway Design. 3 Credits.

Pavement types, wheel-load characteristics; stresses in pavements and subgrades; empirical methods of design of flexible and rigid highway and airfield pavements; general principles of runway design. (Spring, odd years).

CE 6707. Systems Dynamics Modeling and Control. 3 Credits.

Introduction of concepts in control theory and applications to solve problems in civil and transportation engineering dealing with single-input/single-output and multi-input/multi-output systems. Review of classical control theory in the frequency and time domain, state-space analysis, system optimization, and non-linear control. (Fall).

CE 6721. Traffic Engineering and Highway Safety. 3 Credits.

Roadway traffic capacity and network performance measures; steady and unsteady traffic flow phenomena; traffic control signalization theory and practical implementation; monitoring techniques, instruments, and data processing for highway safety. Traffic related highway safety design concepts. (Fall).

CE 6722. Intelligent Transportation Systems. 3 Credits.

Commands, controls and communications in modern multimodal transportation; infrastructure/highway and vehicle automation, advanced traffic management, vehicle control and safety systems; information, data, and sensory requirements; practical applications and projects. Prerequisites: CE 2710 or CE 3720. (Spring).

CE 6800. Special Topics. 1-6 Credits.

Topic to be announced in the Schedule of Classes.

CE 6801. Civil and Environmental Engineering Graduate Internship. 1 Credit.

For graduate students in the department. May be repeated once for credit. Prerequisite: required courses in the area of focus and department approval. Additional prerequisites may be required for a specific internship as determined by the research supervisor.

CE 6808. Research. 1-12 Credits.

Basic research projects, as arranged. May be repeated for credit.

CE 6998. Thesis Research. 3 Credits.

CE 6999. Thesis Research. 3 Credits.

CE 8320. Theory of Elasticity II. 3 Credits.

Application of integral transform and analytic function theory to solution of plane problems; elastic wave propagation. Three-dimensional elasto-statics. Prerequisite: APSC 6211; CE 6207.

CE 8321. Nonlinear Mechanics of Continua. 3 Credits.

Polar decomposition, invariance, isotropy, representation theorems for invariants and isotropic tensor functions. Deformation, kinematics, stress, balance principles. Principles for constitutive relations. Applications to nonlinear elasticity and non-Newtonian fluids. Prerequisite: CE 6206.

CE 8330. Advanced Finite Element Analysis. 3 Credits.

Review of variational formulation of the finite element method. Formulation of various continuum and structural elements. Application to static and dynamic problems in elasticity, plasticity, large deflection, and instability in plates and shells. Recent developments in finite element methods. Same as MAE 6288. Prerequisite: CE 6206, 6210; or MAE 6210, MAE 6286.

CE 8350. Sedimentation Engineering. 3 Credits.

Problems of erosion and sedimentation. Properties of sediment. Initiation of motion. Suspension of sediment and sediment discharge theories. Sedimentation measurements. Economic and legal aspects. Prerequisite: CE 6601 or approval of department.

CE 8351. Mechanics of Alluvial Channels. 3 Credits.

Physical processes in drainage basins and channels. Channel forms and bed forms. Hydraulics and sediment transport in alluvial channels. Design of stable channels. Qualitative and quantitative response of rivers. Channel stabilization, navigation channels. Case studies including environmental impacts. Prerequisite: CE 6601 or approval of department.

CE 8352. Advanced Hydraulics. 3 Credits.

Theory of unsteady flow. Diffusion and dispersion through pipes and open channels. Numerical solutions using finite element and finite difference methods. Prerequisite: CE 6601 or approval of department.

CE 8370. Intelligent Systems Theory and Applications. 3 Credits.

Overview of artificial intelligence, neural networks, genetic algorithms, fuzzy systems, and hybrid intelligent systems and their integration with other information processing methods. Intelligent systems applications; examples are drawn from ITS and traffic engineering, vehicle safety, remote sensing, and structural design optimization. Prerequisite: CE 6707.

CE 8380. Advanced Biomechanics. 3 Credits.

Historical overview of biomechanics and biomaterials. Fundamental concepts in mechanics as applied to the treatment of biological systems. Approaches to the mechanical analysis of the human structure under physiological and non-physiological loading conditions. Constitutive laws for biological materials. Finite element applications. Prerequisite: CE 6206 or 6350. (As arranged).

CE 8998. Advanced Reading and Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy qualifying examination. May be repeated for credit.

CE 8999. Dissertation Research. 1-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

CLASSICAL STUDIES (CLAS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CLAS 1000. Dean's Seminar. 3 Credits.

CLAS 2104. Ancient Medicine and Modern Medical Terms. 3 Credits.

The formation of medical terms derived from Greek and Latin, along with principles that govern the derivation of their meaning. The course includes a survey of ancient medical centers and practices.

CLAS 2105. Special Topics. 0-3 Credits.

Topics in Greek and Roman literature and culture; topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

CLAS 2105W. Special Topics. 3 Credits.

Topics in Greek and Roman literature and culture; topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

CLAS 2106. Mythology of the Classical World. 3 Credits.

The creation of the world, the nature of the gods, and the adventures of heroes as described in various Greek and Roman literary sources (e.g., epic, drama, hymns) and as shown in ancient art.

CLAS 2107. Greek and Roman Drama. 3 Credits.

Study of Greek and Roman tragedy and comedy; the nature and setting of dramatic performance in classical antiquity.

CLAS 2112. Early Aegean and Greek Civilizations to 338 B.C.. 3 Credits.

Neolithic background; Bronze Age–Minoan, Helladic, and Mycenaean civilizations; classical Greek civilization to the Macedonian conquest. Same as HIST 2112.

CLAS 2113. The Roman World to 337 A.D.. 3 Credits.

Prehistoric Italy; rise and decline of the Roman Empire and Latin civilization; cultural, social, and political developments in the Greek world under Roman rule. Same as HIST 2113.

CLAS 2803. The Ancient Near East and Egypt to 322 B.C.. 3 Credits.

Survey of Egyptian, Mesopotamian, Anatolian, West Semitic, and Iranian civilizations from the Neolithic period to Alexander's conquest. Same as HIST 2803.

CLAS 2804. History of Ancient Israel. 3 Credits.

The history of ancient Israel from the Patriarchs through the Romans. Topics include historical, archeological, political, social, cultural, religious, diplomatic, military, economic, and intellectual events, movements, and relationships. Same as HIST 2804.

CLAS 3105. Topics in Classical Studies. 0-3 Credits.

CLAS 3111. Topics in Ancient History. 3 Credits.

May be repeated for credit provided the topic differs. Same as HIST 3111.

CLAS 3114. Topics in Ancient Literatures and Cultures. 3 Credits.

May be repeated for credit provided the topic differs.

CLAS 3115. Topics in Ancient Art and Archaeology. 3 Credits.

May be repeated for credit provided the topic differs. Same as AH 3105.

CLAS 3901. Directed Project. 1-3 Credits.

Individual advanced reading or research, to be arranged with a member of the faculty. May be repeated for credit. Admission by permission of instructor and department.

CLAS 3901W. Directed Project. 1-3 Credits.

CLAS 4901. Directed Project. 1-3 Credits.

Continuation of CLAS 3901. Individual advanced reading or research, to be arranged with a member of the faculty. May be repeated for credit. Admission by permission of instructor and department.

CLINICAL LABORATORY SCIENCE (CLS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CLS 0190. Blood Banking Exam Review. 0 Credits.

CLS 6203. Clinical Immunohematology I. 5 Credits.

CLS 6241. Regltn & Devel/Medical Devices. 3 Credits.

CLINICAL LEADERSHIP (CL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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CL 6221. Topics in Clinical Medicine I. 3 Credits.

CLINICAL MANAGEMENT & LEADERSHIP (CML)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CML 2140. Mgt of HR in Health Sci Org. 3 Credits.

Builds on concepts introduced in HSci 104. Theory and application of management and leadership as they affect the management of human resources in health sciences organizations. Focus is on leadership, ethics, and organizational dynamics in a changing health care environment.

CML 2141. Planning&Mktg/Health Sciences. 3 Credits.

The role of planning and marketing in the management and promotion of health sciences services, products, and organizations. Focus on the theory and application of quality principles in assessment of on-going organizational effectiveness, concepts and techniques of project planning, and methods for identifying and addressing customer needs.

CML 2142. Financial Mgt/Health Sciences. 3 Credits.

An overview of accounting and financial concepts for management of health sciences organizations. Budgeting, cash management, reimbursement guidelines, and financial management.

CML 2143. Current Issues/Hlth Sci Mgt. 3 Credits.

Evaluation of major problem areas in the management of health sciences organizations. Discussions include legal, technological, managerial, organizational, and leadership issues in the changing health care environment.

CML 4144. Seminar/Health Sci Leadership. 3 Credits.

CML 6202. Human Resource Development. 3 Credits.

Methods, techniques and policies appropriate for the development and management of human resources complementary to an organization's vision, strategy, and desired culture. Managerial knowledge, skills and behaviors required for the effective management of people to promote and maintain a professional health care organization will be explored.

CML 6203. Health Info Quality & Outcomes. 3 Credits.

Approaches to medical informatics to support managerial decision making, patient care, and quality improvement in clinical practices. Ethical, legal, and social dimensions of health care information technology.

CML 6204. Marketing Clinical Services. 3 Credits.

The marketing process from the viewpoint of clinical practice managers. Needs assessment, environmental analysis, planning, distribution, pricing, promotion.

CML 6205. CaseStudies/ClinicMgt&Ldrshp. 3 Credits.

Integrative case-based approach to the analysis of complex problems in the management and leadership of clinical practice services.

CML 6274. Health Economics and Finance. 3 Credits.

Issues of health care economics, financial management, and budgeting that relate to managerial decision-making. Applied financial management, management control systems, budgeting, staffing, and cost accounting.

CML 6275. Ldrshp&Change in Clinical Mgt. 3 Credits.

Theories and models of leadership and change from a systems perspective. The development of leadership solutions to problems in clinical organizations; integration of all field course work into implementation plans for health care system changes.

CLINICAL RESEARCH ADMIN (CRA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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CRA 2101. Basics of Clinical Research. 3 Credits.

Fundamental concepts, trends, regulations, and practices in clinical research. An overview of industry and government practices and policies in the development of patient care products (drug, devices, biologicals, and diagnostics) and treatment protocols.

CRA 2102. Processes of Clinical Research. 3 Credits.

Introduction to the processes, procedures, and treatment protocols in the development of patient care products, including RO1 applications, clinical trials protocols, institutional review board standards, adverse event monitoring, and the supporting documentation and practices to obtain Food and Drug Administration approval.

CRA 2103. Good Clinical Practices. 3 Credits.

The organization and management of data, documents, materials and findings resulting from clinical research as prescribed by governmental institutions, regulatory agencies, industry sponsors, and research organizations. Audit standards and mechanisms are introduced, and practice audits are conducted.

CRA 2104. Business of Clinical Research. 3 Credits.

Fiscal and managerial components of clinical research, including the budgeting processes, fiscal management, software applications, legal and contractual issues, and recruitment of personnel and subjects. Examination of all entities involved in clinical research, including drug, device, biological, and diagnostics sponsors; academic medical centers; and contract research organizations, site management companies, physician-run organizations, and health delivery organizations.

CRA 2105. Topics in Clinical Research. 3 Credits.

Guided readings and study in selected aspects of clinical research administration.

CRA 2107. Intro Monitoring Clin. Trials. 3 Credits.

Introduction to the role of monitoring in clinical research administration to ensure valid, reliable, and accurate clinical data and adherence to good clinical practices by sponsors and study sites.

CRA 4106. Clin Research Admin Internship. 3 Credits.**CRA 6201. Critical Analysis Clin Rsch. 3 Credits.**

Analyses of the essential components of clinical research including good clinical practice, human subject protection, study design, and trials administration.

CRA 6202. Clinical Trials Management. 3 Credits.

Analysis of the principles, policies, and practices that impact clinical trials and the development of products within clinical research administration. Framework of the course integrates the regulatory and project management perspectives.

CRA 6203. Partnerships w/Human Subjects. 3 Credits.

Evaluation of the strategies and regulations applied to recruitment, retention, and compliance of participants who enroll in clinical research projects.

CRA 6204. The Clinical Research Industry. 3 Credits.

Analysis of the stakeholders within the clinical research industry and how these stakeholders interact to deliver products, services, and results across health care systems.

CRA 6205. Clinical Investigation. 3 Credits.

Analysis and evaluation of study design strategies and current practices for major therapeutic areas of clinical research (e.g., vaccine development, cardiovascular disease, anti-infectives, CNS, etc.).

CRA 6208. International Clinical Rsrch. 3 Credits.

Analysis of the strategies and methods of clinical research in international settings; explore cultural and ethical consideration in global clinical research projects.

CRA 6209. Monitoring Clinical Research. 3 Credits.

Synthesis and integration of a managerial perspective of the monitoring clinical research through the perspectives of the clinical site, the sponsor, and intermediaries with the process.

CRA 6210. MedicalWriting/ClinicalResrch. 3 Credits.

Strategies and practices in writing documentation related to clinical research administration.

CRA 6212. Teaching Strategies in the Health Professions. 3 Credits.

Teaching skills pertinent to the delivery of education in health sciences professions. Course design illustrates teaching and learning practices grounded in andragogy, contributing to curriculum program objectives of enhancing teaching skills. (Same as EHS 6212) (Fall, spring, and summer).

CRA 6213. Curriculum Development in Health Professions. 3 Credits.

Curriculum development and assessment skills in the health professions. Variables that affect the manner in which individuals learn and interact within professions and organizations. (Same as EHS 6213) (Fall, spring, and summer).

CRA 6275. Ldrshp&Change in ClinRschrAdmin. 3 Credits.

A capstone course focusing on the concept of leadership within the contexts of health professionals, health systems, and health policy.

COLLEGE OF PROFESSIONAL STUDIES (CPS)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CPS 0920. Continuing Research-Master's. 1 Credit.**CPS 1000. Special Topics. 1-4 Credits.****CPS 1090. Assessment of Prior Learning. 1-12 Credits.****CPS 1191. Special Topics. 1-3 Credits.**

Pre-college level course of various topics. May be repeated for credit provided the topic differs. (Summer).

CPS 2101. The Criminal Justice System. 4 Credits.**CPS 2102. Resource Management. 4 Credits.****CPS 2103. Particular Forms of Crime. 4 Credits.****CPS 2104. Leading Teams. 4 Credits.****CPS 2105. Deviance & Social Control. 4 Credits.**

CPS 2106. Strategic Planning. 4 Credits.
CPS 2107. Models of Policing. 4 Credits.
CPS 2108. Criminal Intelligence. 4 Credits.
CPS 2109. Criminal Analysis. 4 Credits.
CPS 2110. Predictive Policing. 4 Credits.
CPS 2130. Intro to Forensic Science. 4 Credits.
CPS 2131. Crime Scene Investigation. 4 Credits.
CPS 2132. Computer Crime Investigation. 4 Credits.
CPS 2133. Incident Management. 4 Credits.
CPS 2134. Ethical Dilemmas in Policing. 4 Credits.
CPS 2170. Domestic Violence. 4 Credits.
CPS 2171. The Criminal Mind. 4 Credits.
CPS 2172. Comparative Police Systems. 4 Credits.
CPS 2173. Transnational Threats&Security. 4 Credits.
CPS 2174. Crisis & Emergency Planning. 4 Credits.
CPS 2175. Emergency Pub. Health Issues. 4 Credits.
CPS 2176. Media,PR&Crisis Communication. 4 Credits.
CPS 2177. Crime Prevention&Phys Security. 4 Credits.
CPS 2191. Special Topics. 1-6 Credits.
CPS 4190. Capstone Project. 4 Credits.
CPS 4192. Capstone Simulation. 2 Credits.
CPS 4199. Independent Research. 1-6 Credits.
CPS 6291. Special Topics. 1-6 Credits.
CPS 6294. Independent Research. 1-6 Credits.
CPS 6295. Supervised Internship. 1-6 Credits.
CPS 6298. Practicum. 0-3 Credits.
CPS 6300. Capstone Research Project. 3 Credits.

COLUMBIAN COLLEGE (CCAS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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CCAS 0920. Continuing Research - Masters. 1 Credit.

CCAS 0940. Continuing Research - Doctoral. 1 Credit.

CCAS 1005. GWECF Advising. 0 Credits.

CCAS 2154. Elective Internship. 0-3 Credits.

Fieldwork and academic work carried out under faculty supervision. Students contract with agency, faculty, and Columbian College. May be repeated to a maximum of 6 credits. Admission by permission of Columbian College. Graded on a P/NP basis only. Zero credit option available only during summer sessions.

CCAS 2190. Special Interdisciplinary Topics. 1-3 Credits.

May be repeated for credit provided the topic differs.

CCAS 2190W. SpecialInterdisciplinaryTopics. 1-3 Credits.

CCAS 3001. Undergraduate Research. 0-3 Credits.

Open to undergraduates at any level. Focused exploration of an idea, question, or issue, under the guidance of a research mentor/supervisor, culminating in a report about the experience. Students must find a sponsoring faculty member and receive approval from the Office of Undergraduate Studies in the Columbian College of Arts and Sciences. Zero-credit option is graded on a P/NP basis only and is available only during summer sessions. Restricted to Registration is restricted; students need to find a faculty mentor/supervisor and receive CCAS approval. (Fall, spring, and summer).

CCAS 4191. Special Interdisciplinary Major Capstone. 3 Credits.

Required of all students completing a special interdisciplinary major. (Fall and spring).

COMMUNICATION (COMM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

COMM 1000. Dean's Seminar. 3 Credits.

COMM 1025. Introduction to Communication Studies. 3 Credits.

Introduction to historical and intellectual development of the field. Students survey the origins of contemporary theory; learn about fundamental concepts, models, investigative tools, and contexts of communication; and explore a variety of professional opportunities awaiting communication graduates.

COMM 1040. Public Communication. 3 Credits.

Study and practice of the basic techniques of public speaking used to inform, to entertain, and to persuade audiences. Emphasis on the speech-building process: audience analysis, research, development, composition, organization, style, delivery, and criticism.

COMM 1041. Interpersonal Communication. 3 Credits.

Study and practice of verbal and nonverbal communication in ritual, information and perspective sharing, problem solving, and relationship formation, maintenance, and dissolution. Designed to raise awareness of the complexity and power of the communication process in daily life and to help students develop interpersonal skills cognitively, affectively, and behaviorally.

COMM 1042. Business and Professional Speaking. 3 Credits.

Study of the communication process in business and professional organizations; practice in interviewing, small group communication, and public presentations. For non-majors and non-minors only.

COMM 2100. Communication Theory. 3 Credits.

Inquiry into the nature and function of communication theory as a framework for the study of communicative behavior. Emphasis is placed on analysis of paradigmatic approaches in rhetorical, interpersonal, and mass communication theories and models, and on examination of contemporary research literature in communication. Prerequisite: COMM 1025.

COMM 2120. Small Group Communication. 3 Credits.

The study and practice of communication in small groups, focusing on problem solving, norms, roles, and leadership. Prerequisite: COMM 1025 or permission of the instructor.

COMM 2140. Nonverbal Behavior. 3 Credits.

Introduction to predominant theories, principles, and problems in the study of nonverbal behavior; application of research results to everyday life. Topics include facial expression, eye behavior, physical appearance, body movement and gestures, tactile messages, vocal characteristics, use of time, spatial dynamics, gender and life-stage differences.

COMM 3110. Research Methods-Communication. 3 Credits.

Processes of inquiry within interpersonal and public communication. Students are introduced to concepts of framing research questions, conducting literature reviews, developing a research design, using qualitative and quantitative research tools, and interpreting results of research in communication. Prerequisite: COMM 2100.

COMM 3110W. Research Methods-Communication. 3 Credits.

Processes of inquiry within interpersonal and public communication. Students are introduced to concepts of framing research questions, conducting literature reviews, developing a research design, using qualitative and quantitative research tools, and interpreting results of research in communication. Prerequisite: Comm 2100.

COMM 3170. Organizational Communication. 3 Credits.

Exploration of the philosophy, process, problems, and potential of human communication within organizational contexts. May involve experiential workshops and fieldwork. Prerequisite: COMM 1041 or COMM 2120 or permission of instructor.

COMM 3171. Professional Communication. 3 Credits.

Principles and theories of communication applied to situations encountered in organizational and professional environments. Development of knowledge and abilities for workplace tasks, such as interviewing, facilitating meetings, providing performance appraisals, designing and delivering instructional materials and other professional presentations.

COMM 3172. Health Communication. 3 Credits.

Exploration of the nature, functions, and impact of relational communication in the context of health care. Both formal (health care organizations) and informal (family communication) systems may be studied. Topics can include provider-patient interaction, media and health, confirmatory communication. Prerequisite: COMM 1041 or COMM 2100 or permission of instructor.

COMM 3173. Communication in a Mediated World. 3 Credits.

An exploration of human-to-human communication mediated by computer technology. Traditional communication theories are applied and adapted to the computer-mediated realm; newer theories of computer-mediated communication are addressed.

COMM 3174. Intercultural Communication. 3 Credits.

Exploration of the process, trends, rewards, and difficulties of human communication in intercultural contexts, with an eye toward establishing guidelines for mitigating miscommunication across cultures. May involve fieldwork. Prerequisite: COMM 1041 or permission of instructor.

COMM 3176. Issues and Image Management. 3 Credits.

The issues and image management function in corporate, professional, and nonprofit organizations. Assignments may include in-class collaboration on case studies of communication campaigns and crisis communication strategies, interviews with professionals in the practice of communication management, and a communication audit of strategies and messages of a selected organization.

COMM 3180. Communication Criticism. 3 Credits.

Evaluation of communication paradigms along critical dimensions of analysis. Prerequisite: COMM 1040 or COMM 4150 or permission of instructor.

COMM 3190. Selected Topics. 1-3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

COMM 4150. Persuasion. 3 Credits.

In-depth study of the principles and techniques of persuasion from both production and consumption perspectives, in both personal and mediated contexts. Emphasis on the common-premise model, with consideration of such topic areas as pathos/ethos/logos, attitude and behavior change, effectiveness, ethics, and subconscious influence. Prerequisite: COMM 1025.

COMM 4196. Independent Study. 1-3 Credits.

Independent research and special projects. Open to seniors or exceptionally well-prepared juniors majoring in communication. Before students are permitted to register, they must submit a written proposal of the plan of study and obtain approval of the faculty member who will direct the study and of the program chair.

COMM 4197. Internship. 3 Credits.

For communication majors and minors. Student-secured internships in public or private communication-related organizations in the metropolitan area. Students spend at least 15 hours per week doing communication-related work. Meetings, reports, and/or analysis paper are required. Admission requires prior program approval. Graded on a Pass/No Pass basis.

COMM 4199. Senior Seminar: Communication. 3 Credits.

Capstone course limited to communication majors. Selected reading and discussion. Each student works on an individually designed research project throughout the term, the results of which will be presented in a major paper. Prerequisite: COMM 2100 and COMM 3110.

COMPUTER SCIENCE (CSCI)

Explanation of Course Numbers

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CSCI 1010. Computer Science Orientation. 1 Credit.

Introduction to the field of computer science. Basic and emerging concepts and applications of computer science. Hands-on experiments and team projects. Technical resources, professional ethics, writing, and presentation.

CSCI 1011. Introduction to Programming with Java. 3 Credits.

An introductory course in programming a computer, using the Java language. Object-oriented programming, classes, applets, methods, control structures, inheritance, overriding, GUI widgets, containers, and exceptions.

CSCI 1020. Applications Software. 3 Credits.

Introduction to the use of microcomputer hardware and software for word processing (e.g., Word), spreadsheets (e.g., Excel), and database management (e.g., Access), with emphasis on the use of computers to solve typical problems in academia and business.

CSCI 1021. Introduction to Computers and the Internet. 3 Credits.

Survey of computers and languages. Introduction to computer programming. History of computing and networking. The effects of computing and the Internet on our lives. E-commerce and new technologies. Concepts of web page design. (Fall and spring).

CSCI 1022. Introduction to Internet Technology. 3 Credits.

An introductory course for non-technical students who wish to obtain a better understanding of the hardware and software that comprise the Internet. Information transfer over fiber, routing and switching of packets, methods of information transfer, protocols, software, ISP, web pages and multimedia.

CSCI 1023. Introduction to Web Software Development. 3 Credits.

Introduction to the Internet. Topics include address and URL to find your way, linking to a URL, HTML and web programming, building a web page, building a home page, client-server techniques. (Fall and spring).

CSCI 1030. Technology and Society. 3 Credits.

Historical, social, and ethical issues of the technological age. Ethical principles and skills and social analysis skills needed to evaluate the design and implementation of complex computer systems. Privacy, computer crime, equity, intellectual property, professional ethics. Data collection, analysis, and presentation; technical writing and oral communication skills.

CSCI 1030W. Technology and Society. 3 Credits.

Historical, social, and ethical issues of the technological age. Ethical principles and skills and social analysis skills needed to evaluate the design and implementation of complex computer systems. Privacy, computer crime, equity, intellectual property, professional ethics. Data collection, analysis, and presentation; technical writing and oral communication skills.

CSCI 1041. Introduction to FORTRAN Programming. 3 Credits.

Structured programming with high-level language using FORTRAN. Control structures. Different data types with emphasis on real and complex number computations. Arrays used with vector and matrix manipulation to solve simultaneous equations. External subroutines for mathematical and graphical applications. Prerequisite or corequisite: Math 1220 or MATH 1231.

CSCI 1111. Introduction to Software Development. 3 Credits.

Introduction to the solution of problems on a digital computer using the Java language. Object-oriented programming concepts; documentation techniques; design of test data. Writing, debugging, and running programs in an interactive computing environment.

CSCI 1112. Algorithms and Data Structures. 3 Credits.

Object-oriented software. Inheritance, exceptions, development of classes, event-driven programming. Data structures such as trees, lists, stacks, queues, and strings. Sorting and searching. Introduction to algorithm performance prediction. May be taken for graduate credit by students in fields other than computer science. Prerequisites: CSCI 1111 with a grade of C or higher; and MATH 1220 or MATH 1231. (Spring).

CSCI 1121. Introduction to C Programming. 3 Credits.

Structured programming with the C language. Control structures. Data types. Use of pointers. Matrix manipulation to solve simultaneous equations. External subroutines for mathematical and graphical applications. Introduction to C> Complex number representation. Corequisite: MATH 1220 or MATH 1231.

CSCI 1131. Introduction to Programming with C. 3 Credits.

Intensive introductory course for students with a science, mathematics, or other quantitative background. Solution of numerical and nonnumerical problems on a digital computer using C programming language in a Unix environment. Recommended for graduate and advanced undergraduate students in other departments. Prerequisite: MATH 1232 .

CSCI 1132. Data Structures and Software Design. 3 Credits.

Data structures such as trees, lists, stacks, queues, and strings. Big-O notation and introduction to algorithm performance analysis. Solutions of numerical and non-numerical problems. Use of I/O libraries. Application development and software testing. Prerequisite: CSCI 1121.

CSCI 1311. Discrete Structures I. 3 Credits.

Mathematics for computer science. Sets, functions, sequences. Propositional and predicate calculus, formal proofs, mathematical induction. Matrices, semigroups, groups, isomorphism. Relations, partitions, equivalence relations, trees, graphs. May be taken for graduate credit by students in fields other than computer science. Prerequisites: MATH 1220 or MATH 1231. (Fall).

CSCI 2113. Software Engineering. 3 Credits.

Programming techniques and software development in one or more programming languages. Application development with GUIs, database access, threads, Web programming. Prerequisites: CSCI 1112 with a grade of C or higher; MATH 1231. (Fall).

CSCI 2312. Discrete Structures II. 3 Credits.

Basic discrete techniques in computer science. Proofs, algebraic structures, number theory, graph theory, (coloring and planar graphs, communication networks), advanced recurrences, advanced sums, approximations and asymptotics. Prerequisites: CSCI 1311 with a grade of C or higher; MATH 1231. (Fall).

CSCI 2441. Database Systems and Team Projects. 3 Credits.

Design of relational database systems, relational query languages, normal forms, design of database applications. Team software development, integration, and testing. Professional code of ethics, intellectual property, privacy, software copyrights. Corequisite: CSCI 2113.

CSCI 2441W. Database Systems&Team Projects. 3 Credits.

Design of relational database systems, relational query languages, normal forms, design of database applications. Team software development, integration, and testing. Professional code of ethics, intellectual property, privacy, software copyrights. Corequisite: CSCI 2113.

CSCI 2461. Computer Architecture I. 3 Credits.

Number representation, computer arithmetic, digital logic and circuit design. Computer organization, micro-architecture and processor datapath, assembly and machine language programming. Introduction to memory organization and the hardware-software interface. Implementation of high-level language constructs. Prerequisites: CSCI 1112 with a grade of C or higher; CSCI 1311. Corequisite: CSCI 2113. (Fall).

CSCI 3212. Algorithms. 4 Credits.

Core concepts in design and analysis of algorithms, data structures, and problem-solving techniques. Hashing, heaps, trees. Graph algorithms, searching, sorting, graph algorithms, dynamic programming, greedy algorithms, divide and conquer, backtracking. Combinatorial optimization techniques. NP-completeness. Prerequisite: CSCI 1311, CSCI 2113.

CSCI 3221. Programming Languages. 3 Credits.

Programming language and software design fundamentals. Writing programs in a non-procedural programming language. Closures; procedure and data abstraction; object-oriented, procedural, and declarative programming; continuation compilation and interpretation, and syntactic extension. Advanced control structures appropriate for parallel programming. Prerequisite: CSCI 2113.

CSCI 3240. Pre-Senior Design with Research. 3 Credits.

For students who wish to combine a research project with their Senior Design project. The goal is to complete the research, under a faculty mentor, within three semesters. Prerequisite: CSCI 3212, CSCI 3313, CSCI 3411, and permission of instructor.

CSCI 3313. Foundations of Computing. 4 Credits.

Theoretical foundations. Formal languages and automata; regular expressions, context-free languages; finite state automata and pushdown automata; Turing machines and computability, recursive function theory, undecidability. Compiler construction. Lexical and syntax analysis; parsing and parsing techniques; lexical and parsing tools. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 3362. Probability for Computer Science. 3 Credits.

Introduction to probability and statistics for computer scientists. Random variables. Conditional probability, independence, correlation. Applications to computer science, including information theory, data compression, coding, inference, Markov chains, introduction to randomized algorithms. Prerequisite: Math 1232, CSCI 1311; or permission of instructor.

CSCI 3410. Systems Programming. 3 Credits.

Concepts underlying all computer systems. Processor operation, hierarchical memory systems, embedded boards, data acquisition, actuation, and systems software such as compilers, linkers, and operating systems from the programmer's perspective. Use of embedded platforms to examine how programs interact with and are constrained by hardware. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 3411. Operating Systems. 4 Credits.

Process management, process state, concurrent processing, synchronization, events. Operating system structure, the kernel approach, processor scheduling, task switching, monitors, threads. System management, memory management, process loading, communication with peripherals. File systems. Socket programming, packets, Internet protocols. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 3462. Computer Architecture II. 0-3 Credits.

Computer organization. Design of computer components and of a simple computer. Instruction set and assembly language of a pipelined RISC processor. Introduction to high-performance processors. Design of cache, main memory, and virtual memory systems. Program performance models and system performance. The I/O structure and peripherals. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 3571. Introduction to Bioinformatics. 3 Credits.

Same as BiSc 2584.

CSCI 3907. Special Topics. 1-3 Credits.

Topic to be announced in the Schedule of Classes. (Fall and spring).

CSCI 3908. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

CSCI 4222. Theory of Computer Translators. 3 Credits.

Lexical and syntax analysis, regular expressions, context-free grammars, parsing techniques, top-down parsing, efficient parsing, syntax-directed translation, intermediate formats, flow of control, block structures, procedure calls, symbol tables, run-time storage, error-detection and recovery, code optimization, code generation. Prerequisite: CSCI 3462, CSCI 3313.

CSCI 4223. Principles of Programming Languages. 0-3 Credits.

Fundamental concepts underlying design of programming languages. Detailed study of functional and object-oriented computational models. Types, evaluation, abstraction, control flow, modules, mutation, laziness, polymorphism, subtyping, inheritance. Practice learning new languages. Prerequisite: CSCI 1311, CSCI 2113.

CSCI 4235. Development of Open-Source Software. 3 Credits.

Design, process, tools, and culture of open-source software development. Cross-platform development and testing. Geographic dispersal, social and team dynamics, licenses (GPL, BSD, other); code reuse (modular code, shared libraries); very-large-scale distributed development techniques (CVS, Bugzilla, release-management, mailing-lists). May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4237. Software Design for Handheld Devices. 3 Credits.

Design of interactive software for handheld devices. Event driven programming, user interface design practices, memory management, handheld debugging techniques. May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4243. Capstone Design Project I. 3 Credits.

Planning, design, and construction of the capstone project. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Report writing and presentations. Prerequisite: senior status.

CSCI 4243W. Capstone Design Project I. 4 Credits.

Planning, design, and construction of the capstone project. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Report writing and presentations. Prerequisite: senior status.

CSCI 4244. Capstone Design Project II. 4 Credits.

Continuation of CSCI 4243. Planning, design, and construction of the capstone project. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Report writing and presentations. Prerequisite: senior status.

CSCI 4314. Discrete Analysis-Computer Sci. 3 Credits.

Combinatorial theory: permutations and combinations, generating functions, recurrence relations, the principle of inclusion and exclusion. Block designs. Applications to the analysis of algorithms, computer organization, VLSI placement, coding theory, simulation, and other problems. May be taken for graduate credit. Prerequisite: CSCI 1311 or permission of instructor.

CSCI 4331. Cryptography. 3 Credits.

Algorithmic principles of cryptography from Julius Caesar to public key cryptography. Key management problems and solutions. Cryptographic systems and applications. Prerequisite: CSCI 2312, CSCI 3313, CSCI 3212.

CSCI 4341. Continuous Algorithms. 3 Credits.

Overview of structures in continuous mathematics from a computational viewpoint. Main topics include continuous system simulation, computational modeling, probability, statistical techniques, next-event simulation, algorithms for continuous optimization, machine learning, neural networks, statistical language processing, robot control algorithms. Prerequisite: CSCI 1311, CSCI 2113.

CSCI 4342. Computational Linear Algebra and Applications. 3 Credits.

Application of linear algebra to computer science and engineering, with a computational perspective. Topics include points, vectors, matrices, and their programming representations; algorithms for 3D transformations, pose and viewpoint estimation; linear equations, independence, rank; algorithms for matrix decompositions, reduction of dimension; computation with large matrices, under and over-determined systems; applications to large data, computer vision, text processing. Prerequisite: CSCI 2113.

CSCI 4361. Simulation Methods. 3 Credits.

Computational methods for continuous and discrete system simulation. Effects of computer software and hardware architectures on computational precision and accuracy requirements. Random-number generation and testing. Calibration and scaling technique. Verification and validation technique. May be taken for graduate credit. Prerequisite: CSCI 2113.

CSCI 4364. Machine Learning. 3 Credits.

Overview of core machine learning techniques: nearest-neighbor, regression, classification, perceptron, kernel methods, support vector machine (SVM), logistic regression, ensemble methods, hidden Markov models (HMM), non-parametrics, online learning, active learning, clustering, feature selection, parameter tuning, and cross-validation. Prerequisite: CSCI 3212, CSCI 3362, MATH 2184; or permission of instructor.

CSCI 4415. Real-Time and Embedded Systems. 3 Credits.

Development of software for real-time control of physical systems. Reliability and fault tolerance, exceptions and exception handling, reliability and concurrent processes, timeouts, deadline scheduling, shared-memory and message-based device drivers. May be taken for graduate credit. Prerequisite: CSCI 2113.

CSCI 4417. UNIX System Programming. 3 Credits.

Exposure to UNIX internals. Use of UNIX system calls and utilities in conjunction with script and C programs. RFCs, GNU project, and other collaborative traditions in the UNIX community. May be taken for graduate credit. Prerequisite: Senior status or 1 year of C programming and UNIX user experience.

CSCI 4418. UNIX System Administration. 3 Credits.

System administration for the stand-alone system or small networks. Installation of two or more UNIX variants (Linux, FreeBSD, Solaris) on Intel or Sparc platforms. Configuration of mail, name services, and other network utilities. Backup and recovery, security and ethics. May be taken for graduate credit. Prerequisite: CSCI 4417.

CSCI 4431. Computer Networks I. 3 Credits.

Higher-layer protocols and network applications on the Internet, such as session layer, presentation layer, data encryption, directory services and reliable transfer services, telnet, network management, network measurements, e-mail systems, and error reporting. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 4431W. Computer Networks I. 3 Credits.

Higher-layer protocols and network applications on the Internet, such as session layer, presentation layer, data encryption, directory services and reliable transfer services, telnet, network management, network measurements, e-mail systems, and error reporting. Prerequisite: CSCI 2461, CSCI 2113.

CSCI 4432. Computer Networks II. 3 Credits.

Computer networks and open system standards. Network configurations and signals, encoding and modulation, transmission media, connection interfaces, error detection and correction, signal compression, switching, link layer control, ISDN, X.25, frame relay, ATM, and Sonet. Bridges, routers, and routing algorithms. Prerequisite: CSCI 4431.

CSCI 4455. Computer Game Design and Programming. 3 Credits.

Principles, techniques, and design of computer games. Graphic game engines, modeling, motion, AI and interaction; sound design and synthesis; real-time software and hardware issues. May be taken for graduate credit. (Fall).

CSCI 4511. Artificial Intelligence Algorithms. 3 Credits.

Knowledge representation and reasoning, propositional logic and predicate calculus. Logic programming. Search, game trees, backtracking. Planning. May be taken for graduate credit. Prerequisite: CSCI 3221, CSCI 3212.

CSCI 4521. Introduction to Mobile Robotics. 3 Credits.

Overview of autonomous mobile robotics. Sensing, localization, calibration, mapping, perception, decision making, planning, and control. Emphasis on algorithmic rather than hardware aspects of robotics. Development of algorithms that can operate autonomous mobile platforms in complex, real-world environments. Prerequisite: MATH 1232, MATH 2184; CSCI 3362 or CSCI 4341.

CSCI 4525. Autonomous Robotics: Manipulation. 3 Credits.

Introduction to robot manipulation. Core principles necessary to program robots for autonomous operation in dynamic and typically human-centric environments. Transdisciplinary concepts from computer science (reinforcement learning, perception), mechanical engineering (kinematics, dynamics), and electrical engineering (control theory). Prerequisite: permission of instructor.

CSCI 4527. Introduction to Computer Vision. 3 Credits.

Introduction and overview of computer vision. Image-formation signal processing and filtering. Saliency, image features and feature extraction, tracking, stereo disparity estimation, structure from motion, photogrammetry, optic flow, homography estimation and warping, scene segmentation, place recognition, object recognition, robust estimation, and camera calibration. Prerequisite: MATH 1232, MATH 2184; CSCI 4362 or CSCI 4341.

CSCI 4531. Computer Security. 3 Credits.

Risk analysis, cryptography, operating system security, identification and authentication systems, database security. Prerequisite: CSCI 3411; corequisite: CSCI 4431.

CSCI 4532. Information Policy. 3 Credits.

Roles, issues, and impacts of computer-based information systems in national and international arenas, focusing on privacy, equity, freedom of speech, intellectual property, and access to personal and governmental information. Professional responsibilities, ethics, and common and best practices in information use.

CSCI 4541. Network Security. 3 Credits.

Security protocols and applications in local, global, and wireless networks; IPsec and packet-level communication security systems; network authentication and key-exchange protocols; intrusion detection systems and firewalls; secure network applications; network worms and denial-of-service attacks. Prerequisite: CSCI 4531.

CSCI 4551. Concepts and Applications of Computer Graphics. 3 Credits.

Introduction to computer graphics without programming; building 3-D geometry and rendering; computer animation; virtual reality and computer games; hands-on projects in modeling, rendering, and animation using commercial software; hands-on projects in photo and video manipulation.

CSCI 4552. Design of Computer Animation I. 3 Credits.

Use of commercial 3-D computer animation packages to create digital artistic works. Principles of animation, including timing, exaggeration of motion, and anticipation; use of a storyboard; modeling; motion; rendering and editing. Prerequisite: CSCI 4551.

CSCI 4553. Design of Computer Animation II. 3 Credits.

Use of commercial 3-D animation packages to create artistic works and visualizations. Process-spanning concepts of development through pre-production, production, and post-production. Emphasis on developing original content and attaining high production values. Prerequisite: CSCI 4552.

CSCI 4554. Computer Graphics 1. 3 Credits.

Hardware; concepts of graphics subroutine packages; programming concepts for interaction, display, and data structuring; basic clipping and scan-conversion algorithms; homogeneous coordinates; three-dimensional viewing transforms; basic rendering. May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4561. Design of User-Interface Programs. 3 Credits.

Structure of interactive programs. Widgets, windows, and input devices. Client-server model, event-driven programming, and callbacks. Window systems (e.g., Xwindows) and dialog control. May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4572. Computational Biology. 3 Credits.

Pairwise alignment and scoring. Multiple sequence alignment. Fragment assembly, physical mapping of DNA. Phylogenetic trees. Molecular structure prediction and protein folding. Microarrays and microarray data, image comparison. Clustering. Overview of biological databases, PDB, MMDB, GenBank. Draft genomes and genome browsers. Pathway databases. May be taken for graduate credit. Prerequisite: CSCI 3571 and CSCI 3212 or CSCI 6212.

CSCI 4576. Introduction to Biomedical Computing. 3 Credits.

A survey of the problems and solutions in biomedical computing. Application of computers in medicine. Patient care and monitoring systems, electronic medical records, digital imaging and analysis. Telemedicine, medical ethics, health care regulations and organizations.

CSCI 4577. Biomedical Computing. 3 Credits.

Computing issues in epidemiology and biosurveillance, decision support, medical imaging and visualization, image-guided surgery; medical databases, issues in system integration, mobile medical computing. May be taken for graduate credit. Prerequisite: CSCI 2113, CSCI 4576; corequisite: CSCI 2441.

CSCI 6010. Introduction to Computer Science Fundamentals. 3 Credits.

Review of programming in a high-level language using Java or C> Introduction to objects and object-oriented programming: static and dynamic objects, inheritance, dynamic method invocation. Data structures: 2D-arrays, linked-lists, stacks, queues, trees, hashing. Discrete structures: sets, graphs, permutations and combinations. Prerequisite: one year of course work in programming in C, C< or Java.

CSCI 6011. Introduction to Computer Systems. 3 Credits.

Introduction to basic concepts underlying all computer systems. Processor operation, hierarchical memory systems, elementary logic circuits, and systems software such as compilers, linkers, and operating systems from the programmer's perspective. Prerequisite: one year of course work in programming in C, C< or Java.

CSCI 6212. Design and Analysis of Algorithms. 3 Credits.

Design and analysis of algorithms. Turing machines; NP-Complete theory. Algorithmic techniques: divide-and-conquer, greedy, dynamic programming, graph traversal, backtracking, and branch-and-bound. Applications include sorting and searching, graph algorithms, and optimization. Prerequisite: CSCI 1311, CSCI 1112.

CSCI 6213. Advanced Data Structures. 3 Credits.

Sparse matrix transpose and multiplication. List insertion and deletion, lists of available space. In-order, preorder, and postorder traversal of trees. Topological sorting. Binary search trees, including AVL trees, B-trees, and tries. Dynamic hashing. Prerequisite: CSCI 6212.

CSCI 6221. Advanced Software Paradigms. 3 Credits.

Object-oriented, procedural, functional, and concurrent software design paradigms; design patterns; software life-cycle concepts. Tradeoffs between compiled and interpreted languages. Examples from Ada, Java, C, C< and Perl. Prerequisite: CSCI 1311, CSCI 1112.

CSCI 6223. Principles of Programming Languages. 3 Credits.

Fundamental concepts underlying design of programming languages. Detailed study of functional and object-oriented computational models. Types, evaluation, abstraction, control flow, modules, mutation, laziness, polymorphism, subtyping, inheritance. Practice learning new languages. Prerequisite: CSCI 1311, CSCI 2113.

CSCI 6231. Software Engineering. 3 Credits.

The life-cycle model. Requirements and specifications. Design models, structured and object-oriented design. Program development, PDL's tools, configuration control. Program, unit, and integration testing. Program verification. Other development models. Development metrics. Computer-aided software engineering (CASE). Prerequisite: CSCI 6221, CSCI 6212.

CSCI 6232. Software Engineering Development. 3 Credits.

Formal methods in software engineering. First-order logic, basic specification elements, rigorous proofs, formal development process, concurrency. Prerequisite: CSCI 6461, CSCI 6212.

CSCI 6233. Software Testing & Quality. 3 Credits.

Flow graphs and path testing, transaction flow testing, data flow testing, software metrics, system testing, test planning and documentation, reliability, statistical testing. Prerequisite: CSCI 6231.

CSCI 6234. Object-Oriented Design. 3 Credits.

Object-oriented systems, software reusability, software modularity, top-down and bottom-up approaches, object classification, genericity, metaprogramming, concurrent object-oriented programming languages. Prerequisite: CSCI 6221.

CSCI 6235. Component-Based Enterprise Software Development. 3 Credits.

Component-based software development for enterprise applications. Component models, multi-tier architecture. Specific case studies may include topics such as Enterprise Java Beans, DCOM, and COBRA. Prerequisite: CSCI 6221.

CSCI 6311. Theory of Computation. 3 Credits.

Theoretical foundations of computer science. Formal languages and automata; regular expressions, context-free languages, parsing; Turing machines and complexity; partial recursive functions; undecidability; program correctness; fixed-point theory; formal specifications of software. Prerequisite: CSCI 6212.

CSCI 6312. Graph Theory & Applications. 3 Credits.

Undirected and directed graphs. Connectivity, partitions, cycles and matchings. Edge and vertex coloring, chromatic polynomials, and the four-coloring problem. Planar graphs and Kuratowski's theorem. Properties of random graphs. Applications to a variety of problems. Prerequisite: CSCI 6212.

CSCI 6313. Advanced Discrete Structures. 3 Credits.

Discrete techniques in computer science. Algebraic structures, vector spaces, linear transforms, norms, matrices, complex numbers, convolution and polynomial multiplication, Fourier analysis, discrete Fourier transform, number theory. Applications to computer security, coding theory, and audiovisual signal processing. Prerequisites: CSCI 1311 and Math 1232.

CSCI 6318. Complex Systems. 3 Credits.

The edge-of-chaos phenomenon, phase transitions, power laws, small-world networks, Boolean networks, cellular automata, and complex dynamics. Applications to networks and biological systems. Prerequisite: CSCI 6212.

CSCI 6331. Cryptography. 3 Credits.

Review of mathematical theory for cryptography. Classical ciphers. Modern block and stream ciphers. Symmetric and asymmetric systems. Digital signatures. Public key infrastructure. Authentication. Prerequisite: CSCI 6212.

CSCI 6341. Continuous Algorithms. 3 Credits.

Overview of structures in continuous mathematics from a computational viewpoint. Main topics include continuous system simulation, computational modeling, probability, statistical techniques, next-event simulation, algorithms for continuous optimization, machine learning, neural networks, statistical language processing, robot control algorithms. Prerequisite: CSCI 1311, CSCI 2113.

CSCI 6342. Computational Linear Algebra and Applications. 3 Credits.

Linear algebra applied to computational problems in computer science and engineering. Topics include points, vectors, matrices, and their programming abstractions; 3D transformations, pose and viewpoint estimation; linear equations; algorithms for matrix decompositions, dimension reduction, computation with large matrices, under- and over-determined systems; applications to big data, computer vision, text processing. Prerequisite: CSCI 2113.

CSCI 6343. Numerical Solutions of Algebraic Systems. 3 Credits.

Numerical solutions of linear algebraic equations and the algebraic eigenvalue problem. Sparse matrix techniques. Solutions of nonlinear simultaneous equations. Interpolation and extrapolation. Prerequisite: CSCI 6212.

CSCI 6351. Data Compression. 3 Credits.

Background on signals, information theory, transforms, human vision, and metrics. Lossless and lossy compression techniques. Video compression. Compression standards. Progressive transmission. Prerequisite: CSCI 6212.

CSCI 6362. Probability for Computer Science. 3 Credits.

Concepts of probability and statistics used in computer science. Random variables. Conditional probability, independence, correlation. Law of large numbers, central limit theorem. Applications to computer science, including entropy, information theory, data compression, coding, inference, Markov chains, randomized algorithms. Prerequisite: MATH 1232, CSCI 1311; or permission of instructor.

CSCI 6364. Machine Learning. 3 Credits.

Machine learning algorithms: nearest-neighbor, regression, classification, perceptron, kernel methods, support vector machine (SVM), logistic regression, ensemble methods, boosting, graphical models, hidden Markov models (HMM), non-parametrics, online learning, active learning, clustering, feature selection, parameter tuning, and cross-validation. Prerequisite: CSCI 6212; CSCI 6362, MATH 2184; or permission of instructor.

CSCI 6365. Advanced Machine Learning. 3 Credits.

Theory and algorithms for machine learning research. In-depth focus on advanced machine learning topics such as clustering, learning from data streams, and Climate Informatics. Prerequisite: CSCI 4364, CSCI 6212, CSCI 6362, MATH 2184; or permission of instructor.

CSCI 6411. Advanced Operating Systems. 3 Credits.

Fundamentals of operating system design and structure, resource management, and system support for multi-core. Topics include scheduling, synchronization, system structure, virtual address spaces, memory management, I/O management, and systems abstractions for modern multi-core architectures. The course involves an implementation component and requires substantial programming experience. This course can be taken for credit by undergraduates who have taken CSCI 3411. Prerequisite: CSCI 6461 or CSCI 2461.

CSCI 6412. OS Design & Implementation. 3 Credits.

Builds on CSCI 6411 to provide students with the knowledge to build parts of modern operating systems, which will be studied and motivated from the viewpoint of practical design and implementation. Students will learn how operating system's components for resource management and abstraction are built from the ground up and integrated into working systems considering the challenges of reliability, multi-core, and security. The course has a significant implementation component; substantial low-level programming experience is required. Prerequisite: CSCI 6411.

CSCI 6421. Distributed and Cluster Computing. 3 Credits.

In-depth study of the algorithmic and implementation challenges in building large scale distributed applications. Topics include distributed coordination, scheduling, consistency issues, and fault tolerance algorithms. The course will cover how fundamental distributed systems concepts are applied to both high performance computing and cloud computing environments. The course will mix algorithmic concepts and practical implementation concerns; substantial programming experience is recommended. Prerequisite: CSCI 6212, CSCI 3411.

CSCI 6431. Computer Networks. 3 Credits.

Fundamental concepts in the design and implementation of computer communication networks and internet, their protocols, and applications. Layered network architectures, applications, network programming interfaces, transport, routing, data link protocols, local area networks, network management, and network security. Prerequisite: CSCI 6461.

CSCI 6433. Internet Protocols. 3 Credits.

Understanding of the layered protocols for the Internet. Interconnection of networks. The IP protocol and routing algorithms, switches, bridges, and routers. The transmission control protocol (TCP). Addressing and names. Application-specific protocols, FTP, TELNET, SMTP, SNMP, HTTP. Domain name services. Prerequisite: CSCI 6221, CSCI 6431.

CSCI 6434. Design of Internet Protocols. 3 Credits.

Protocol specifications and formal description methods. Finite-state descriptions of Internet protocols. Specification and Description Language. Implementation of protocol specifications. Prerequisite: CSCI 6212, CSCI 6433.

CSCI 6441. Database Management Systems. 3 Credits.

Design and architecture of relational database management systems; query languages, data models, index structures, database application design. Prerequisite: CSCI 6221, CSCI 6461.

CSCI 6442. Database Systems II. 3 Credits.

Concepts in database systems. Relational database design. Editing, report generation, updating, schema refinement, tuning. Construction of database management systems. Conceptual and logical design of a database. Prerequisite: CSCI 6441.

CSCI 6443. Data Mining. 3 Credits.

Fundamental concepts of data mining. Algorithm techniques for data mining, including classification, clustering, association rules mining. Prerequisite: CSCI 6441 or permission of instructor.

CSCI 6448. Scientific Databases and Knowledge Formation. 3 Credits.

Database management and information retrieval. Relational algebra and SQL query language. Advanced retrieval capabilities. Data mining. Rules of inductive inference. Classification, clustering, and machine learning techniques. Confronting the problems of complexity. Prerequisite: CSCI 1311 and either CSCI 1132 or CSCI 1112.

CSCI 6451. Information Retrieval Systems. 3 Credits.

Information organization and retrieval of natural language data by digital computer systems; statistical, syntactic, and logical analysis of natural language; dictionary and thesaurus systems; searching strategies and cataloging. Large-scale file structures. Prerequisite: CSCI 6221, CSCI 6461.

CSCI 6461. Computer System Architecture. 3 Credits.

Concepts in processor, system, and network architectures; architecture of pipeline, superscalar, and VLIW/EPIC processors; multiprocessors and interconnection networks. Cache coherence and memory subsystem design for multiprocessor architectures. Parallel and distributed system architecture; internetworking. Prerequisite: CSCI 1311, CSCI 1112, CSCI 2461.

CSCI 6511. Artificial Intelligence. 3 Credits.

Representation and space search. Heuristic search. Predicate calculus. Knowledge representation and knowledge engineering for expert systems. Rule-based, hybrid, and O-O systems. Semantic nets, frames, and natural language. Theorem provers. Overview of planning, learning, neural nets. Use of AI languages. Prerequisite: CSCI 4511, CSCI 6212.

CSCI 6512. Adaptive Learning Systems I. 3 Credits.

Learning as an alternative to rule-based schemes for artificial intelligence. Deterministic and probabilistic simulation of games. Markovian and bounded-context systems. The algedonic process. Introduction to collective learning systems theory. Design, simulation, and evaluation of collective learning automata. Prerequisite: CSCI 4511, CSCI 6212.

CSCI 6515. Natural Language Understanding. 3 Credits.

The state of the art of natural language parsing and semantic understanding by computer systems. Review of formal, context-free, and transformational grammars and parsing. Augmented transition networks: problems of complexity, semantics, and context. Deterministic parsing and semantic parsing. Prerequisite: CSCI 6511.

CSCI 6519. Models of Cognition. 3 Credits.

The central nervous system as a natural precedent for AI: structure and function of the neuron and neural networks; sensors and actuators; modular brain function. The cognitive process. Intelligence metrics. Genetics and self-organizing systems. Memory mechanisms. The psychological basis of learning and behavior. Prerequisite: CSCI 4511, CSCI 6212.

CSCI 6521. Introduction to Mobile Robotics. 3 Credits.

Concepts of autonomous mobile robotics with emphasis on algorithmic aspects. Sensing, sensor fusion, localization, calibration, mapping, perception, decision making, planning, behavior-based control, world modeling, and navigation. Development of algorithms that can operate autonomous mobile platforms in complex, real-world environments. Prerequisite: MATH 1232, MATH 2184; CSCI 6362 or CSCI 4341.

CSCI 6525. Autonomous Robotics: Manipulation. 3 Credits.

Manipulation and autonomous operation in dynamic, human-centric environments. Reinforcement learning, perception, optimization algorithms, kinematics, dynamics, control theory. Prerequisite: CSCI 6362, MATH 2184; or permission of instructor.

CSCI 6527. Introduction to Computer Vision. 3 Credits.

Image signal processing and filtering. Saliency, features and feature extraction, tracking, stereo disparity estimation, structure from motion, photogrammetry, optic flow, homography estimation and warping, scene segmentation, place recognition, object recognition, robust estimation, and camera calibration. Current research topics. Prerequisite: MATH 1232, MATH 2184; CSCI 6362 or CSCI 6341.

CSCI 6531. Computer Security. 3 Credits.

Functional description of cryptographic primitives. Risk analysis. Policy models: security, confidentiality, integrity, hybrid. Design principles: access control, information flow, confinement. Assurance: formal methods, evaluation. Malicious logic: security effects of programming languages. Prerequisite: CSCI 6461.

CSCI 6532. Information Policy. 3 Credits.

Roles, issues, and impacts of computer-based information systems in national and international arenas, focusing on privacy, equity, freedom of speech, intellectual property, and access to personal and governmental information. Professional responsibilities, ethics, and common and best practices in information use.

CSCI 6534. Information Security in Government. 3 Credits.**CSCI 6541. Network Security. 3 Credits.**

Security protocols and applications in local, global, and wireless networks; IPSec and packet-level communication security systems; network authentication and key-exchange protocols; intrusion detection systems and firewalls; secure network applications; network worms and denial-of-service attacks. Prerequisite: CSCI 6531.

CSCI 6542. Computer Network Defense. 3 Credits.

Offensive and defensive information warfare operations. Simulation of various attacks on and defenses of computer systems. Laws related to information warfare. History and literature related to information warfare attacks. Prerequisite: CSCI 6541.

CSCI 6545. Software Security. 3 Credits.

Security for software systems. Theory and practice of designing and implementing secure software. Security in the context of software engineering. Practical experience with building a software system and securing it, with emphasis on correctness and robustness. Requires substantial prior programming experience. Prerequisite: CSCI 6461 or CSCI 6411; CSCI 6531 or EMSE 6540 or permission of instructor.

CSCI 6547. Wireless and Mobile Security. 3 Credits.

Mobile Agents, Wireless Web, WAP, WEP, Peer-to-Peer Computing; secure routing; intrusion detection and authentication on wireless networks; security for handheld devices; encryption and cryptographic measures for wireless; real-time wireless security; security measures for embedded devices. Prerequisite: CSCI 6431, CSCI 6531.

CSCI 6548. E-Commerce Security. 3 Credits.

Advanced technical topics in e-commerce security. X.500 registration systems, X.509/PKIX certification systems, secure payment methods, smart cards, authorization models in open distributed environments. Secure web systems, technologies, and applications. Prerequisite: CSCI 6541.

CSCI 6554. Computer Graphics II. 3 Credits.

Curves and surfaces. Spatial sampling and aliasing. Visible surface algorithms. Illumination and shading models, raytracing and radiosity. Image manipulation and texture mapping. Procedural models. Prerequisite: CSCI 4554.

CSCI 6555. Computer Animation. 3 Credits.

Euler angles and quaternions; articulated figure motion; forward and inverse kinematics; kinematic, physics based, and behavioral motion control; rendering problems (temporal aliasing); sound synthesis and synchronization; recording and editing techniques. Prerequisite: CSCI 4554 or permission of instructor.

CSCI 6561. Design of Human-Computer Interface. 3 Credits.

Design of dialogues for interactive systems. Psychological, physiological, linguistic, and perceptual factors. Advantages and disadvantages of various interaction techniques, command language syntaxes, and data presentations. Design methodology and guidelines. Case studies, research readings, and projects. Prerequisite: CSCI 6221.

CSCI 6562. Design of Interactive Multimedia. 3 Credits.

History, theory, and development of multimedia concepts. Hardware components, platforms, and authoring tools. Scientific, technical, and cognitive foundations of various media including text, sound, graphics, and video. Interface design. Use of a media taxonomy as a design and evaluation tool. Completion of a multimedia portfolio required. Prerequisite: CSCI 6221.

CSCI 6572. Computational Biology Algorithms. 3 Credits.

Algorithms and models for DNA and protein sequence alignments, gene finding, identification of gene regulatory regions, sequence evolution and phylogenetics, RNA and protein structure, microarray and/or proteomics data analysis. Prerequisite: CSCI 6212 ; programming experience in C/C or Java.

CSCI 6900. Colloquium. 0 Credits.

Lectures by outstanding authorities in computer science. Topics to be announced each semester. (Fall and spring).

CSCI 6907. Special Topics. 1-3 Credits.

Topics to be announced in the Schedule of Classes. (Fall and spring).

CSCI 6908. Research. 1-12 Credits.

Applied research and experimentation projects, as arranged. May be repeated for credit.

CSCI 6998. Thesis Research. 3 Credits.**CSCI 6999. Thesis Research. 3 Credits.****CSCI 8211. Advanced Topics in Algorithms. 3 Credits.**

Graph algorithms, strongly connected components, biconnected components, dominators in acyclic graphs, ordered trees, network flow, planarity testing, bipartite matching, theory of NP completeness, NP-complete problems. Design and analysis of approximation algorithms for NP-complete problems. Prerequisite: CSCI 6212.

CSCI 8231. Advanced Topics in Software Engineering. 3 Credits.

Seminar on current research and developments in software engineering. Students develop a software package with the aid of available software tools such as requirement tool, design tool, code generators, testing tools, measurement tools, cost estimation tools. Prerequisite: CSCI 6232, CSCI 6233.

CSCI 8331. Advanced Cryptography. 3 Credits.

Linear and differential cryptanalysis. Cryptanalysis of AES. Factorization and primality. Computational and information-theoretic secrecy. Theory of secrecy. Zero-knowledge proofs. Secret sharing. Cooperative distributed cryptography. Provable security. Prerequisite: CSCI 6331.

CSCI 8401. Advanced Topics in Systems. 3 Credits.

Seminar on current research and developments in computer operating systems. May be repeated for credit. (Spring, even years).

CSCI 8431. Advanced Topics in Computer Networks and Networked Computing. 3 Credits.

Seminar on current research and developments in computer networks, Internet, networked computing, mobile computing and pervasive computing. May be repeated for credit.

Prerequisites: CSCI 6461, CSCI 6212, CSCI 6433.

CSCI 8440. Advanced Topics in Data Management. 3 Credits.

Seminar on current research and developments in computer database systems and information retrieval. May be repeated for credit. Prerequisite: CSCI 6442 or CSCI 6451.

CSCI 8511. Advanced Topics in Artificial Intelligence. 3 Credits.

Seminar on current research and developments in machine intelligence and cognitive science. May be repeated for credit. Prerequisite: Permission of the instructor.

CSCI 8531. Advanced Topics in Security. 3 Credits.

Seminar on current research and developments in information assurance. May be repeated for credit. Prerequisite: CSCI 6531.

CSCI 8554. Advanced Topics in Computer Graphics. 3 Credits.

Seminar on current research and developments in computer graphics. Spatial and temporal anti-aliasing; hidden-surface algorithms; illumination models, radiosity, textural mapping. May be repeated for credit. Prerequisite: CSCI 6554.

CSCI 8900. Advanced Selected Topics. 3 Credits.

Topics announced in the Schedule of Classes.

CSCI 8901. Research and Evaluation Methods. 3 Credits.

Required for all computer science doctoral candidates.

The scientific method; research/design requirements and objectives: qualitative, quantitative, and case studies; performance metrics; design procedures and control; sources of error and bias; evaluation tools; formal validation methods; documentation standards. Prerequisite: APSC 3115.

CSCI 8998. Computer Science Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy qualifying examination. May be repeated for credit.

CSCI 8999. Dissertation Research. 1-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

COUNSELING (CNSL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CNSL 0920. Continuing Research - Masters. 1 Credit.**CNSL 0940. Cont Research - Doctoral. 1 Credit.****CNSL 2102. Foundations of Counseling. 3 Credits.****CNSL 2162. Professional and Ethical Orientation to Counseling. 3 Credits.**

The roles and functions of a professional counselor and the ethical standards that govern the profession.

CNSL 2163. Psychosocial Adjustment. 3 Credits.

Mental health problems; emphasis on needs of counselors, teachers, and others working with children and adolescents.

CNSL 2376. Introduction to Rehabilitation Counseling. 3 Credits.

Overview of rehabilitation profession, including philosophy, history, ethics, theory, legislation, settings, and practice.

CNSL 2378. Disability Management and Psychosocial Rehabilitation. 3 Credits.

Case management services for persons with physical, mental, and emotional disabilities.

CNSL 2381. Medical and Psychosocial Aspects of Disabilities. 3 Credits.

Chronic and traumatic disorders; rehabilitation and psychosocial implications.

CNSL 6100. Special Workshop. 1-12 Credits.

Topics to be announced in the Schedule of Classes. May be repeated for credit.

CNSL 6101. Research and Independent Study. 1-3 Credits.

Individual research under guidance of a staff member. Program and conferences arranged with an instructor.

CNSL 6103. Thesis Research. 3 Credits.**CNSL 6104. Thesis Research. 3 Credits.****CNSL 6130. Vocational Assessment of Individuals with Disabilities. 3 Credits.**

Investigation of vocational appraisal processes and techniques for individuals with disabilities. Includes assessment for transition using field-based assignments. Three credits of practicum experience for students specializing in vocational evaluation. Material fee. Same as SPED 6230.

CNSL 6151. Professional and Ethical Orientation to Counseling. 3 Credits.

The roles and functions of a professional counselor and the ethical standards that govern the profession.

CNSL 6153. Counseling Interview Skills. 3 Credits.

Acquisition of counseling skills common to all theories through lectures, demonstrations by faculty, role playing, and videotaping. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others. Material fee.

CNSL 6154. Theories and Techniques of Counseling. 3 Credits.

An introduction to basic counseling and psychotherapeutic theories and associated techniques. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6155. Career Counseling. 3 Credits.

A consideration of theory, practice, and the body of information related to career counseling, choice, and development over the life span. Prerequisite: CNSL 6153, EDUC 6114 for counseling majors; permission of instructor is required for others. Material fee.

CNSL 6157. Individual Assessment in Counseling. 3 Credits.

Detailed study of individual analysis and appraisal techniques. Development of systematic case study. Prerequisite: CNSL 6153, EDUC 6114 for counseling majors; permission of instructor is required for others. Material fee.

CNSL 6159. Psychosocial Adaptation. 3 Credits.

Mental health problems; emphasis on needs of counselors, teachers, and others working with children, adolescents, and adults.

CNSL 6161. Group Counseling. 3 Credits.

Principles of group dynamics as related to interaction within groups. Techniques and practice in group counseling. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6163. Social/Cultural Dimensions-Cns. 3 Credits.

Basic sociocultural concepts in counseling theory and how they apply to the practice of the counseling profession. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6164. Values, Spiritual, and Religious Issues in Counseling. 3 Credits.

The theoretical and practical intersection of counseling, psychotherapy, and mental health considerations with religion and spirituality. The clinically effective and ethically responsible integration of religion and spirituality into counseling. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6169. Counseling Substance Abusers. 3 Credits.

Individual, group, family, and self-help counseling applied to substance abusers. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6170. Grief and Loss. 3 Credits.

Exploration and discussion of grief and loss from theoretical, practical, cross-cultural, and personal perspectives; implications for counselors within a multidisciplinary environment.

CNSL 6171. Family Counseling. 3 Credits.

The family as a system: how it affects the client and how the client affects it. Didactic presentations, role playing, and work with simulated families. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6172. Human Sexuality for Counselors. 3 Credits.

Issues of sexuality as related to counseling in contemporary society. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6173. Diagnosis and Treatment Planning. 3 Credits.

For counselors and mental health practitioners. Symptoms and treatment of various mental disorders. The process of making psychiatric diagnoses. A variety of treatment strategies are covered, along with their application to various disorders. Prerequisite: CNSL 6153.

CNSL 6174. Trauma and Crisis Intervention. 3 Credits.

This course provides the counseling student with an introduction to research, theory, and practices within the field of traumatology. The course will cover the historical evolution of the field; biopsychosocial underpinnings of trauma and trauma spectrum disorders; issues in diagnosis, assessment, and intervention from a culturally diverse framework; and a synthesis of best practices as they are currently evolving. Using a developmental and systemic approach, the course will provide a counseling perspective on the knowledge base from the multiple disciplines that contribute to the field of traumatology.

CNSL 6175. Living and Dying: A Counseling Perspective. 3 Credits.

Survey of fundamental psychosocial issues surrounding grief, loss, and life-threatening illness. Topics include AIDS, suicide, multiple loss, caregiver's grief, spirituality, and cross-cultural issues.

CNSL 6177. Spirituality and Loss. 3 Credits.

Exploration of how spiritual beliefs, faith traditions, and life philosophy affect the process of dying, bereavement, and grieving. Effective counseling approaches.

CNSL 6179. Children and Loss. 3 Credits.

The process of grief, loss, and death as experienced by children and adolescents from theoretical, moral, spiritual, and developmental perspectives. Development of effective and sensitive skills and competencies to meet the needs of children and their families as they face life-challenging transitions.

CNSL 6185. Practicum/Internship in Counseling. 3 Credits.

Part of a two-semester clinical experience for degree and certificate candidates in counseling. Includes 100 hours of supervised practicum in a counseling setting. Material fee. (Spring).

CNSL 6186. Advanced Internship in Counseling. 3-6 Credits.

Part of a two-semester clinical experience for degree and certificate candidates in counseling. Material fee. Prerequisite: CNSL 6185.

CNSL 6188. Systems in Career Counseling Development. 3 Credits.

The complex role of systems in career counseling and development. Class and work experience in the areas of career assessment, computerized career planning, and the design and evaluation of career counseling systems.

CNSL 6189. Career Development and the Contemporary Workforce. 3 Credits.

Through case studies, simulations, and group work, the demographics and challenges of the workforce in the United States are examined. The knowledge, skills, and competencies necessary to respond to current trends and projected changes in the global workforce.

CNSL 6190. Advanced Career Counseling. 3 Credits.

Expansion of career development theory, concepts, and practice: the helping relationship, delivery systems, current market and economic information, and available resources. Prerequisite: CNSL 6155 (for counseling majors); permission of instructor is required for others. Material fee.

CNSL 6268. Foundations/Practicum: Clinical Mental Health Counseling. 3 Credits.

Description of community counseling settings, problems clients present, and a consideration of appropriate intervention strategies.

CNSL 6376. Foundations/Practicum: Rehabilitation and Case Management. 3 Credits.

Survey of history, philosophy, basic principles, legislation, roles, and services.

CNSL 6378. Disability Management and Psychosocial Rehabilitation. 3 Credits.

Disability management services; psychosocial aspects of disability; rehabilitation services for persons with psychiatric disabilities.

CNSL 6380. Job Placement and Supported Employment. 3 Credits.

Job development and modification: placement of persons with disabilities.

CNSL 6381. Medical and Psychosocial Aspects of Disabilities. 3 Credits.

Chronic and traumatic disorders with rehabilitation and psychosocial implications.

CNSL 6395. Foundations of Forensic Rehabilitation Counseling I. 3 Credits.

Overview of the roles and functions of professionals who provide forensic rehabilitation services in matters of litigation. Vocational assessments, labor market issues, transferable skills analysis, job analyses. Instruments utilized in forensic rehabilitation.

CNSL 6396. Foundations of Forensic Rehabilitation Counseling II. 3 Credits.

Workers' compensation, personal injury, medical/professional malpractice, catastrophic injury, loss of earnings capacity, and life care planning. Ethical standards, practices, federal court rules, and common situations found in the litigation process.

CNSL 6397. Law and the Rehabilitation Consultant. 3 Credits.

Overview of law and court procedures for forensic rehabilitation professionals. Qualification of forensic experts, roles and functions of expert witnesses, discovery, work product, hearsay, direct and cross-examination, admissibility of evidence, and opinions in state and federal venues.

CNSL 6398. Psychopharmacology. 3 Credits.

CNSL 6466. Foundations of School Counseling K-12. 3 Credits.

Study of the environmental and specialty elements for school counseling, with special attention to the principles and practices of school counseling.

CNSL 8100. Special Workshop. 1-12 Credits.

Topics to be announced in the Schedule of Classes. May be repeated for credit.

CNSL 8101. Research and Independent Study. 1-3 Credits.

CNSL 8244. Advanced Group Counseling. 3-6 Credits.

A post-master's course on interpersonal process groups, with didactic, experiential, and supervisory components. Prerequisite: CNSL 6161 ; permission of instructor is required.

CNSL 8252. Advanced Leadership and Advocacy in Counseling. 3 Credits.

Theory and practice of consultation and administration, with focus on school, community, and rehabilitation settings. Research issues. Admission by permission of instructor.

CNSL 8253. Work, Identity, and Adult Development. 3 Credits.

The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as HDEV 8253/HOL 8742.

CNSL 8254. Advanced Multicultural Counseling. 3 Credits.

Recent research addressing key aspects of multicultural counseling. Practical knowledge about effective skills practice in the provision of services to clients from different cultural backgrounds, with emphasis on experiential and cognitive/behavioral approaches. Restricted to Admission by permission of instructor. Prerequisites: CNSL6163 Social and Cultural Dimensions of Counseling. Recommended background: PhD degree student in the field of counseling; completed a master's degree in counseling. (Spring).

CNSL 8255. Advanced Supervision in Counseling. 3 Credits.

Theory and practice of clinical supervision and consultation for preparation to enter supervisory positions in the field of counselor education. Current thinking regarding supervisory theory/models, practice, research, and ethics. Restricted to Admission by permission of instructor. Recommended background: For PhD degree students. (Summer).

CNSL 8257. Doctoral Practicum in Counseling. 3 Credits.

Experiential learning of advanced counseling and counseling-related competencies through direct, supervised participation in group work, research, teaching, and/or consultation. Admission by permission of instructor.

CNSL 8258. Advanced Theories of Counseling. 3 Credits.

Current research on counseling and psychotherapy process and outcome; critical analysis of theory with applications for practice and research. For Ed.S. and Ph.D. degree candidates in the field of counseling. Admission by permission of instructor.

CNSL 8259. Doctoral Internship in Counseling and Counselor Supervision. 3 Credits.

CNSL 8260. Doctoral Internship in Counseling and Counselor Supervision. 3 Credits.

CNSL 8961. Seminar: Counseling. 1-12 Credits.

CNSL 8998. Predissertation Seminar. 3 Credits.

CNSL 8999. Dissertation Research. 3,6 Credits.

Prerequisite: CNSL 8998/ EDUC 8998.

CURRICULUM AND PEDAGOGY (CPED)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CPED 0920. Continuing Research - Masters. 1 Credit.

CPED 0940. Continuing Research - Doctoral. 1 Credit.

CPED 6100. Special Topics. 1-12 Credits.

Topics and fees announced in the Schedule of Classes.

CPED 6100W. Special Topics. 1-12 Credits.

CPED 6101. Research and Independent Study. 1-3 Credits.

Individual research under the guidance of a staff member; program and conferences arranged with an instructor.

CPED 6172. Strategies for Inclusion: Addressing the Needs of Diverse Learners. 3 Credits.

Strategies by which teachers can more effectively assume the responsibility to serve all children in an inclusionary setting, including those who are second language learners and students with disabilities. Same as SPED 6272.

CPED 6175. The Culturally and Linguistically Diverse Student with Special Needs: Policy, Research, and Trends. 3 Credits.

Educational service delivery for the culturally and linguistically diverse student. National, state, and local policies; current research in bilingual education, special education, and bilingual special education. Material fee. Same as SPED 6275.

CPED 6176. Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student. 3 Credits.

Issues in academic and psychosocial assessment of second language learners. The impact of second language acquisition and culture on the assessment process; differentiation between language difference and disability; IEP development; the use of interpreters and translators; the involvement of family and communities; standardized and alternative assessments; and legislative mandates. Material fee. Same as SPED 6276.

CPED 6199. Federal Education Policy Institute. 3 Credits.

The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as SPED 6299.

CPED 6221. Developmental Reading: Emergent Literacy. 3 Credits.

The components of a balanced literacy program for emergent, beginning, and early-instructional-level readers. Incorporation of phonological awareness, phonics, fluency, reading comprehension, and writing lessons into a balanced reading-literacy program. (Fall and spring).

CPED 6223. Reading Instruction in Content Areas: Elementary, Intermediate, and Secondary Schools. 3 Credits.

Emphasis on acquisition and continuing development of content literacy, including integrated methods, media, and teaching demonstrations. (Fall).

CPED 6224. Diagnostic Teaching of Reading: K-6. 3 Credits.

Collection of diagnostic data; construction of informal traditional and non-traditional reading and writing tests; other instruments of evaluation; selecting and planning activities suitable to specific problems. Prerequisite: at least one previous course in reading.

CPED 6225. Introduction to International Curricula. 3 Credits.

CPED 6229. Current Issues in Elementary Education. 3 Credits.

Identification, definition, and analysis of some of the most important problems facing the contemporary American elementary school.

CPED 6236. Analysis of Teaching. 3 Credits.

Teaching viewed as a system; component aspects are examined with a view toward developing a critical method of analysis. Material fee. (Spring).

CPED 6238. Clinical Practicum in Reading. 3-6 Credits.

Supervised clinical experience, including observation and participation, in testing, tutoring, and teaching. Clients may include preschoolers through adults. Minimum clinic hours required are 120 for 3 credits and 220 for 6 credits. Admission by permission of instructor. Material fee.

CPED 6239. Practicum in Curriculum and Instruction. 3-6 Credits.

Supervised field experience in curriculum and instruction. Admission by permission of instructor.

CPED 6287. Clinical Study and Treatment of Reading Problems. 3 Credits.

A case study approach is employed to develop participants' competence to assess and tutor children, adolescents, and adults of diverse backgrounds, presenting a variety of reading and writing difficulties. Prerequisite: CPED 6622 and CPED 6224. Material fee.

CPED 6288. Clinical Study and Treatment of Reading Problems. 3 Credits.

Continuation of CPED 6287. A case study approach is employed to develop participants' competence to assess and tutor children, adolescents, and adults of diverse backgrounds, presenting a variety of reading and writing difficulties. Prerequisite: CPED 6622 and CPED 6224. Material fee.

CPED 6289. Organization and Administration of Reading Programs. 3 Credits.

The roles of school administrators, reading teachers, reading specialists, and literary coaches. Issues in planning, organizing, and monitoring the total reading program. (Spring).

CPED 6292. Internship: Reading. 3-6 Credits.

Limited to graduate students in reading and literacy education. Experience in a selected area of teaching or supervisory service in field-based programs. Prerequisite: permission of instructor.

CPED 6305. Foundations of Curriculum Theory. 3 Credits.

Examination of the educational ideas of individuals and groups that have influenced American and international curriculum development and practice during the 20th and 21st centuries. Comparisons of the issues, models, and principles that have guided curricular thought, development, and innovation. (Fall, spring, and summer).

CPED 6340. Teacher Leadership in Education. 3 Credits.

From the perspectives of educational theory and practice, the ideals and realities of contemporary public school teaching are viewed within a system of local, state, and federal organizations, with the goal of enhancing the role of teachers as knowledgeable and effective leaders in their profession. Prerequisite: CPED 6604, CPED 6608, . Material fee.

CPED 6353. Post-Master's Internship in Curriculum and Instruction. 3-6 Credits.

Supervised professional internship in curriculum, instruction, teaching, research, or policymaking. Internships are individually arranged. (Same as SPED 8353) (Fall, spring, and summer).

CPED 6365. Perspectives and Research in Teaching Computer Science. 3 Credits.

Prerequisite: the appropriate subject content course from CPED 6545 through CPED 6550.

CPED 6366. Perspectives and Research in Teaching English. 3 Credits.

Prerequisite: the appropriate subject content course from CPED 6545 through CPED 6550.

CPED 6367. Perspectives and Research in Teaching Science. 3 Credits.

Prerequisite: the appropriate subject content course from CPED 6545 through CPED 6550.

CPED 6368. Perspectives and Research in Teaching Social Studies. 3 Credits.

Prerequisite: the appropriate subject content course from CPED 6545 through CPED 6550.

CPED 6370. Perspectives and Research in Teaching Mathematics. 3 Credits.

Prerequisite: the appropriate subject content course from CPED 6545 through CPED 6550.

CPED 6409. Reading Children's Literature Across the Curriculum. 3 Credits.

Participants read and analyze multicultural children's literature (from folktale to nonfiction) while simultaneously practicing discussion, dramatization, art, and writing response strategies suitable for involving all students and integrating literature across the school curriculum. (Spring).

CPED 6411. Elementary School Curriculum and Methods. 3 Credits.

A comprehensive block course with subsections in mathematics, science, language arts, and social studies. Integrated with CPED 6635. May be repeated for up to 15 credits; with permission, up to four blocks (to a total of 12 credits) may be taken in one semester. Admission by permission of advisor. Material fee.

CPED 6507. Instructional Models and Classroom Management. 3 Credits.

The interconnections between effective instruction and positive classroom management. Through planning, implementing, and evaluating learning activities that apply research-based practices, students link instructional and management strategies to specific content and thinking goals. Microteaching lab. Material fee.

CPED 6530. Assessment in the Secondary Classroom. 3 Credits.

Key concepts and principles in the field of educational assessment, with emphasis on practical applications for classroom teachers. Students design and evaluate a range of assessment tools in their content areas. Practical, day-to-day grading issues; consideration of a framework for analysis of equity in assessment practices.

CPED 6532. Professional Internship in Middle School Education. 3-6 Credits.

Supervised internship in middle schools; required seminar. Admission by permission of instructor. Material fee.

CPED 6534. Professional Internship in Secondary Education. 3-6 Credits.

Supervised internship; required seminar. Admission by permission of instructor. Material fee.

CPED 6544. Educational Technology and Computer Literacy Methods. 3 Credits.

Computers and related technologies in educational settings. Using national technology standards for teachers as a framework, the course combines discussion of key issues related to technology in education, demonstration of technology-related instructional methods, and hands-on computer use and materials development. Prerequisite: CPED 6606 and CPED 6507. Material fee.

CPED 6545. Teaching Computer Science in Secondary Schools. 3 Credits.

Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Prerequisite: CPED 6606 and CPED 6507 and the approved certification course work in the content area. Material fee. Offered in the fall semester.

CPED 6546. Teaching English in Secondary Schools. 3 Credits.

Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Prerequisite: CPED 6606 and CPED 6507 and the approved certification course work in the content area. Material fee. Offered in the fall semester.

CPED 6547. Teaching Science in Secondary Schools. 3 Credits.

Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Prerequisite: CPED 6606 and CPED 6507 and the approved certification course work in the content area. Material fee. Offered in the fall semester.

CPED 6548. Teaching Social Studies in Secondary Schools. 3 Credits.

Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Prerequisite: CPED 6606 and CPED 6507 and the approved certification course work in the content area. Material fee. Offered in the fall semester.

CPED 6549. Teaching Art in Secondary Schools. 3 Credits.

Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Prerequisite: CPED 6606 and CPED 6507 and the approved certification course work in the content area. Material fee. Offered in the fall semester.

CPED 6550. Teaching Mathematics in Secondary Schools. 3 Credits.

Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Prerequisite: CPED 6606 and CPED 6507 and the approved certification course work in math through calculus. Material fee. Each course is offered in the fall semester.

CPED 6551. Second Language Instruction. 3 Credits.

Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Prerequisite: CPED 6606 and CPED 6507 and the approved certification course work in the content area. Material fee. Offered in the fall semester.

CPED 6554. Issues, Study & Practices-ESL. 3 Credits.

A critical review of scholarship and research findings in English as a second language. Major policy issues and implications that relate to ESL practice. (Summer).

CPED 6555. Educating Language Minorities. 3 Credits.

A study of federal, state, and local policies and issues affecting the education of linguistically diverse populations. Resources for use with specific linguistically diverse groups. (Spring).

CPED 6556. Linguistic Applications in English as a Second Language. 3 Credits.

A study of the science of language (phonology, morphology, syntax, semantics) and how its different branches (descriptive, social, applied, etc.) may be used for ESL teacher training, classroom instruction, material development, evaluation, research, and policy development. (Fall and summer).

CPED 6557. Second Language Acquisition. 3 Credits.

Nature of first and second language acquisition and development; emphasis on sociolinguistics and psycholinguistics most pertinent to educational settings. (Fall and summer).

CPED 6604. Perspectives in American Education. 3 Credits.

Historical and social development of education in the United States; evolution of American education related to the growth of the nation and the changing social order; examination of selected issues in contemporary education.

CPED 6606. Theories of Learning and Development. 3 Credits.

A comprehensive investigation of the complex relationship between teaching and learning—how learning takes place, how it is motivated, and how it is influenced. Material fee.

CPED 6608. Development and Diversity. 3 Credits.

An examination of student diversity in relation to theories of human growth and development. Investigation of diverse student strengths and needs; the special needs population; the dynamics of inclusion; and intercultural issues related to the teaching/learning process. Material fee.

CPED 6622. Foundations of Reading Development. 3 Credits.

Basic theories and processes of reading acquisition and assessment; linguistic, cognitive, developmental, social, and affective bases of reading; influences of media, instructional strategies, including formal and informal assessment. Design and implementation of instruction in critical literacy. (Fall).

CPED 6626. Diagnostic Teaching of Reading in Secondary School. 3 Credits.

Collection of diagnostic data; construction of informal traditional and non-traditional reading and writing tests; other instruments of evaluation; selecting and planning activities suitable to specific problems. Prerequisite: at least one previous course in reading.

CPED 6627. Teaching Second Language Reading and Writing. 3 Credits.

An emphasis on acquisition and continuing development of content literacy, including integrated methods, media, and teaching demonstrations geared toward second language learning requirements. Material fee. (Spring).

CPED 6635. Professional Internship in Elementary Education. 3-6 Credits.

Supervised internship; required seminar. Admission by permission of instructor. Material fee.

CPED 6691. Reading and Writing Across the Curriculum: Middle and High School. 3 Credits.

A framework is presented for establishing a focus on reading and writing. Principles and strategies for developing students' reading and writing skills in art, literature, social studies, mathematics, and science. (Fall, spring, and summer).

CPED 8100. Special Topics. 1-12 Credits.

Topics and fees announced in the Schedule of Classes.

CPED 8101. Research and Independent Study. 1-3 Credits.**CPED 8199. Federal Educ Policy Institute. 3 Credits.****CPED 8309. Supervising Preservice Clinical Experience. 1-3 Credits.**

. (Fall, spring, and summer).

CPED 8325. Advanced Ideas in Curriculum Theory. 3 Credits.

Examination of reviews and research studies on curriculum theory. Focus on trends, values, interpretations, design systems, and evaluation. Prerequisite: CPED 6305.

CPED 8330. Paradigms of Instruction and Assessment. 3 Credits.

A foundation of theory, models, and variables that have contributed to the fields of instruction and assessment. The major paradigms of instruction and assessment. Material fee. (Spring).

CPED 8331. Seminar in Instruction. 3 Credits.

Analysis of alternative models of instruction and the factors that influence the instructional process in schools. Connections among learning, instructional theory, research, and practice. Material fee. (Fall).

CPED 8332. Search of the Literature in Curriculum and Instruction. 3 Credits.

Analysis of types of literature reviews in the field of curriculum and instruction and development of a literature review; the relationship of theory building to review of literature, and how research questions arise from extant theory and related literature. For doctoral students in curriculum and instruction, to precede CPED 8998. Material fee. (Spring).

CPED 8333. School Reform through Professional Development. 3 Credits.

Fundamental perspectives of school reform through professional development of educators (K-12); evolution of contemporary professional development models and trends: examination of interactive modules using selected professional development activities. Material fee. (Spring).

CPED 8334. Seminar in Research in Curriculum and Instruction I. 1-3 Credits.

Models of curriculum and instruction research that span various research methods. (Fall, spring, and summer).

CPED 8335. Seminar in Research in Curriculum and Instruction II. 1-3 Credits.

Development of initial research proposal ideas for the dissertation. (Fall, spring, and summer).

CPED 8354. Doctoral Internship: Teacher Education. 3-6 Credits.

Supervised professional internship in college teaching, administration, supervision, research, policymaking, or private agency function. Admission by permission of advisor.

CPED 8998. Doctoral Seminar in Curriculum and Instruction. 3-6 Credits.

Review of literature; preparation of a dissertation proposal and a manuscript of publishable quality. Admission by permission of instructor and approval of major advisor. Material fee.

CPED 8999. Dissertation Research. 3-6 Credits.

Prerequisite: CPED 8998.

DECISION SCIENCES (DNSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

DNSC 4900. Special Topics. 0-3 Credits.

DNSC 6201. Intro to Business Analytics. 1.5 Credit.

DNSC 6202. Mathematics and Statistics for Management. 3 Credits.

Mathematical and statistical concepts employed in the solution of managerial problems. Applications of functions, elements of calculus, and linear algebra. Introduction to probability, frequency distributions, statistical inference, and regression and correlation. (Fall, spring, and summer).

DNSC 6203. Statistics for Analytics. 1.5 Credit.

DNSC 6204. Optimization Methods & Apps I. 1.5 Credit.

DNSC 6206. Stochastic Fndn: Prob Models. 1.5 Credit.

DNSC 6207. Applied Probability Models. 1.5 Credit.

DNSC 6208. Computational Optimization. 3 Credits.

DNSC 6209. Forecasting for Analytics. 1.5 Credit.

DNSC 6210. Decision and Risk Analytics. 1.5 Credit.

Concepts, methods, and practical tools to analyze managerial decisions involving risk and uncertainty. Decision tree modeling, the strategic value of information, real options valuation, measurement and incorporation of risk preferences, and Monte Carlo simulation. The roles and limitations of judgment and sensitivity and robustness analysis as means to deal with the ambiguities inevitably present in real situations. (Spring).

DNSC 6211. Programming for Analytics. 3 Credits.

Accessing, preparation, handling, and processing data that differ in variety, volume, and velocity. The ability to handle and process data is a core capability in the context of any analytics position in the industry. Development of a theoretical grounding in emerging paradigms like schema-less data. The programming environments that will be typically employed include Python and R. (Fall).

DNSC 6212. Optimization Methods and Applications. 3 Credits.

Linear, network, integer, and nonlinear models and their fundamental underlying analytic concepts and solution methods. Emphasis on development of an intuitive understanding of solution methods and their underpinning theoretical paradigms for effective use of optimization models. Model formulation, solutions, and interpretation of results. (Fall and spring).

DNSC 6216. Business Analytics Skills Workshops. 1.5 Credit.

Workshops that develop targeted skills in team dynamics, communication, project management, and policies for analytic projects. (Spring).

DNSC 6217. Business Analytics Practicum. 1.5 Credit.

Working in small teams, students apply their analytics skills to projects sponsored by public or private institutions. Each team is advised by a faculty member, and the practicum sponsor designates a mentor to provide guidance to the team for the duration of the project. Prerequisite: MSBA degree candidacy. (Spring and summer).

DNSC 6230. Mgt of Technology Innovation. 3 Credits.

DNSC 6234. Procurement & Contracting. 3 Credits.

Principles and concepts essential to effecting large procurement programs. Planning, sourcing, and contractual design for diverse acquisitions. Emphasis on federal government policy with comparison of buying at other governmental levels and the private sector. (Spring).

DNSC 6247. Organization, Management, and Leadership. 3 Credits.

Fundamentals of human resource management for project managers. Tools and techniques for success in managing and leading people in a project environment. (Fall and spring).

DNSC 6250. Project Management Finance. 3 Credits.

DNSC 6251. Optimization Models for Decision Making. 1.5 Credit.

Optimization techniques, including linear programming, sensitivity analysis, networks, integer programming and multiple objective optimization, and nonlinear and evolutionary programming. Prerequisite: DNSC 6202.

DNSC 6252. Risk Analysis for Decision Making. 1.5 Credit.

Probabilistic modeling techniques, including influence diagrams, utility theory, subjective and empirical probability distribution assessment, simulation models, queuing theory, Markov chains, and game theory. Prerequisite: DNSC 6202.

DNSC 6254. Risk Management. 1.5 Credit.

Basic principles of risk management practices. Developing a risk management plan, including identifying, analyzing, mitigating, and monitoring projects risks. Prerequisite: either DNSC 6261 and DNSC 6202 or MBAD 6221 and MBAD 6222.

DNSC 6257. Cost Estimation and Control. 1.5 Credit.

Methods of developing project estimates during the planning stages and updating the estimates throughout the life of the project; monitoring, reporting, controlling, and managing project cost; relationships between project cost and other parameters, including scope, time, quality, reliability and procurement risk. Prerequisite: DNSC 6202, DNSC 6261.

DNSC 6258. Executive Decision Making. 1.5 Credit.

DNSC 6259. Project Portfolio Management. 1.5 Credit.

Management of an organization's portfolio of projects for the overall success of the enterprise; alignment of projects with an organization's strategy and goals and consistency with values and culture. Prerequisite: DNSC 6202 or MBAD 6221 and MBAD 6222.

DNSC 6261. Introduction to Project and Program Management. 3 Credits.

Practical examination of how projects can be managed from start to finish, including specific emphasis on planning and controlling to avoid common pitfalls. Identifying needs, defining requirements, project costing, scheduling, resource allocation, and project politics. (Fall, spring, and summer).

DNSC 6262. Directed Computational Project Management. 3 Credits.

Practical examination of project management concepts by quantitative application using various software tools. Research in real cost data to support project calculations. Prerequisite: DNSC 6254, DNSC 6257, DNSC 6261, DNSC 6267.

DNSC 6263. Managing External Projects. 3 Credits.

Fundamentals of contract management from a project manager's perspective. The outsourcing process, associated project strategies, and legal elements. Acquisition planning, vendor selection, contract formulation, and performance control.

DNSC 6265. Intern't'l Devlpmnt fr ProjMgrs. 3 Credits.**DNSC 6267. Planning and Scheduling. 3 Credits.**

Integrated planning, scheduling, and control systems for planning the scope of a project; optimizing time, cost, and resources; and monitoring and controlling schedules, including those for delayed projects. Prerequisite: DNSC 6202, DNSC 6261.

DNSC 6269. Project Management Application. 3 Credits.

Students will be expected to demonstrate integration of the knowledge accumulated in their study plan and apply integrated knowledge and experience to best practices, a project case history, and a handbook. Prerequisite: M.S.P.M. candidacy or permission of instructor.

DNSC 6274. Statistical Modeling and Analysis. 3 Credits.

The process of specifying, analyzing, and testing models of human and systemic behavior. Formalization of models; statistical test comparison and selection; computer implementation of univariate, bivariate, and multivariate tests. General linear model: linear regression, analysis of variance, and analysis of covariance. Prerequisite: MBAD 6221 and MBAD 6222.

DNSC 6275. Advanced Statistical Modeling and Analysis. 3 Credits.

Advanced topics associated with the general linear model. Testing for and remediation of assumption violations. Detection of outliers, influential observations, and multicollinearity. Alternative design strategies in the analysis of variance; latent growth analysis; hierarchical linear modeling; testing for interactions and parallelism. Prerequisite: DNSC 6274 or permission of instructor.

DNSC 6276. Exploratory and Multivariate Data Analysis. 3 Credits.

Methods for exploratory and multivariate data analysis. Application and comparison of advanced multivariate analytical procedures. Multivariate and discriminant analysis, LISREL analysis, and canonical correlation. Prerequisite: DNSC 6274 or permission of instructor.

DNSC 6277. Applied Forecasting and Time-Series Analysis for Managers. 3 Credits.

Introduction to various forecasting techniques, including time-series regression models, cyclical trends, exponential smoothing methods, seasonal and nonseasonal ARIMA processes, and the Box-Jenkins approach. Application of forecasting methods in economics, finance, and marketing. Prerequisite: MBAD 6222 or permission of instructor.

DNSC 6279. Data Mining. 3 Credits.

How organizations make better use of the increasing amounts of data they collect and how they convert data into information that is useful for managerial decision making. Examination of several data mining and data analysis methods and tools for exploring and analyzing data sets. State-of-the-art software tools for developing novel applications.

DNSC 6290. Special Topics. 0-3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

DNSC 6298. Directed Readings and Research. 0-3 Credits.**DNSC 6300. Thesis Seminar. 3 Credits.****DNSC 8328. Special Topics in Decision Making. 3 Credits.**

Special topics and advanced applications, such as catastrophe theory, Markovian decision processes, and Bayesian statistics. May be repeated once for credit.

DNSC 8385. Special Topics in Research Methods. 3 Credits.

Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers. (Fall and spring).

DNSC 8397. Advanced Special Topics. 1-3 Credits.

Current research and scholarly issues in management science.

DNSC 8998. Advanced Rdgs & Research. 1-12 Credits.

Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

DNSC 8999. Dissertation Research. 1-12 Credits.

Limited to doctoral candidates. May be repeated for credit.

EAST ASIAN LANGUAGE AND LITERATURE (EALL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EALL 1075. East Asian Calligraphy. 3 Credits.

Writing of Chinese characters with traditional writing implements. No knowledge of the language required. Covers the history, aesthetics, and philosophy of East Asian scripts and calligraphy and their relationships to paintings, seal carving, and literature. Same as FA 1075.

EALL 3811. Confucian Literature in East Asia. 3 Credits.

General introduction to the Confucian traditions of literature, with an emphasis on history, historical writings, popular tales, and drama in China, Japan, and Korea. Same as REL 3811.

EALL 3814. Religion and Philosophy in East Asia. 3 Credits.

General introduction to the religions and philosophical tradition of China, Japan, and Korea. Same as REL 3814.

EALL 3814W. Religion and Philosophy in East Asia. 3 Credits.

General introduction to the religions and philosophical tradition of China, Japan, and Korea. Same as REL 3814.

EALL 3831. Daoism in East Asia. 3 Credits.

Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Same as REL 3831.

EALL 3831W. Daoism in East Asia. 3 Credits.

Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Same as REL 3831.

EALL 3832. Myth, Ritual, and Popular Religion in China. 3 Credits.

Key aspects of popular religious myths, symbols, rituals, and practices in China, such as ancestor worship, spirit possession, fengshui theories, and pilgrimage. Same as REL 3832.

EALL 3881. Women, Gender, and Religion in China. 3 Credits.

A historical introduction to the concepts of body, gender, and womanhood in Confucian, Daoist, Buddhist, and popular Chinese religious traditions. Women's roles in religious ritual and practices; the influence of Christianity and modernity. (Fall).

EALL 4197. Independent Study. 1-3 Credits.

Departmental approval is required to register.

ECONOMICS (ECON)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ECON 1000. Dean's Seminar. 3 Credits.

ECON 1011. Principles of Economics I. 3 Credits.

Major economic principles, institutions, and problems in contemporary life. Microeconomics—supply and demand, the price system and how it works, competitive and monopolistic markets.

ECON 1012. Principles of Economics II. 3 Credits.

Continuation of ECON 1011. Major economic principles, institutions, and problems in contemporary life.

Macroeconomics—national income concepts, unemployment and inflation, institutions of monetary control. ECON 1011 is prerequisite to ECON 1012.

ECON 2101. Intermediate Microeconomic Theory. 3 Credits.

Analysis of household economic behavior, including derivation of demand functions. Analysis of firm behavior, including derivation of supply frameworks. Demand and supply interaction under various market structures and in factor markets. Prerequisites: ECON 1011, ECON 1012; MATH 1221, MATH 1231, or MATH 1252. (Fall, spring, and summer).

ECON 2102. Intermediate Macroeconomic Theory. 3 Credits.

Investigation of the determinants of national income, inflation, unemployment, and interest rates. Alternative business cycle theories, with emphasis on the role of imperfect information, uncertainty, and expectations. Prerequisites: ECON 1011, ECON 1012; MATH 1221, MATH 1231, or MATH 1252. (Fall, spring, and summer).

ECON 2103. Intermediate Microeconomic Theory: A Mathematical Approach. 3 Credits.

Analysis of household economic behavior, including derivation of demand functions, and of firm behavior, including derivation of supply frameworks. Demand and supply interaction under various market structures and in factor markets. Reliance on constrained and unconstrained optimization techniques when analyzing household and firm behavior. Corequisite: MATH 1232. Recommended for students pursuing the B.S. degree. Prerequisites: ECON 1011, ECON 1012; MATH 1221, MATH 1231, or MATH 1252. (Fall).

ECON 2104. Intermediate Macroeconomic Theory: A Mathematical Approach. 3 Credits.

Development and application of mathematical models of aggregate economic behavior with a focus on the intertemporal choices made by households, firms, and governments. The use of rigorous economic analysis provides a deeper understanding of the determinants of the economy's performance. Recommended for students pursuing the B.S. degree. Corequisite: MATH 1232. Prerequisites: ECON 1011, ECON 1012; MATH 1221, MATH 1231, or MATH 1252. (Spring).

ECON 2121. Financial Economics. 3 Credits.

Economic analysis of key financial institutions, markets, and variables. Investigation of the performance of asset markets and the roles of money, credit, interest rates, and exchange rates. Examination of private sector institutions like equity markets and the banking system and the roles of regulators like the Federal Reserve. Prerequisite: ECON 1011- ECON 1012.

ECON 2122. Monetary Theory and Policy. 3 Credits.

Analysis of classic and modern monetary theories and their application to current economic conditions. The links between theory and policy. The altered role of money over time; the new money technology. Prerequisite: ECON 1011- ECON 1012.

ECON 2123. Introduction to Econometrics. 3 Credits.

Joint offering of the Economics and Statistics Departments. Construction and testing of economic models: regression theory, parameter estimation, and statistical techniques applicable to economic models. Prerequisites: MATH 1221 or MATH 1231 or MATH 1252; STAT 1051 or STAT 1053 or STAT 1111. (Same as STAT 2123) (Fall, spring, and summer).

ECON 2136. Environmental and Natural Resource Economics. 3 Credits.

Analysis of a variety of environmental and natural resource problems. The economic causes of these problems, their consequences, and the relative merits of alternative policies for dealing with them. Prerequisite: ECON 1011- ECON 1012.

ECON 2148. Survey of Health Economics. 3 Credits.

Economic analysis of the determinants of demand, supply, output, and distribution in the health care sector, with special emphasis on current policy issues of access, quality, and cost. Credit may not be earned for both ECON 2148 and ECON 3148. Prerequisites: ECON 1011 - ECON 1012. (Spring and summer).

ECON 2151. Economic Development. 3 Credits.

Theories and empirical studies of the economic problems of developing countries. Prerequisite: ECON 1011- ECON 1012.

ECON 2151W. Economic Development. 3 Credits.

ECON 2157. Urban and Regional Economics. 3 Credits.

Analysis of the determinants of urban growth and development; firm location; the functioning of urban land and housing markets. Prerequisite: ECON 1011- ECON 1012.

ECON 2158. Industrial Organization. 3 Credits.

Analysis of market structure, conduct, and performance of firms in a market economy, with emphasis on case studies of U.S. industries. Prerequisite: ECON 1011- ECON 1012.

ECON 2159. Government Regulation of the Economy. 3 Credits.

Economic analysis of antitrust and regulation in the American economy. Prerequisite: ECON 1011- ECON 1012 and ECON 2101 or ECON 2158.

ECON 2160. Surv:Finance&Engineering Econ. 3 Credits.

ECON 2167. Economics of Crime. 3 Credits.

Analysis of crime, both empirical and theoretical, that examines the links between law and economics, the economics of criminal participation, and the economics of law enforcement. Prerequisite: ECON 1011- ECON 1012.

ECON 2169. Introduction to the Economy of China. 3 Credits.

Background, organization, and operation of the economy. Appraisal of performance and analysis of problems of development. Prerequisite: ECON 1011- ECON 1012.

ECON 2170. Intro to the Economy of Japan. 3 Credits.

Analysis of the structure and growth of the Japanese economy. Prerequisite: ECON 1011- ECON 1012.

ECON 2180. Survey of International Economics. 0-3 Credits.

Basic concepts of international trade and international finance, with emphasis on policy issues. Prerequisites: ECON 1011- ECON 1012. (Fall, spring, and summer).

ECON 2181. International Trade Theory and Policy. 3 Credits.

The basis for international trade and the effect of trade on consumers, producers, and workers; the causes and effects of the international movement of factors including foreign direct investment, outsourcing, and migration; and the impacts of trade policies and trade agreements. Credit may not be earned for both ECON 2181 and ECON 3181. Prerequisites: ECON 1011- ECON 1012. (Fall, spring, and summer).

ECON 2182. International Macroeconomic Theory and Policy. 3 Credits.

Topics include the balance of payments, the determination of exchange rates and prices in open economies, the interaction of the exchange rate and domestic economic activity, international financial markets, and exchange rate and financial crises. Prerequisites: ECON 1011- ECON 1012. (Fall, spring, and summer).

ECON 2185. Economic History and Problems of Latin America. 3 Credits.

Analysis of present structures and problems of Latin American economies. Prerequisite: ECON 1011–ECON 1012.

ECON 2195W. Special Topics. 3 Credits.

ECON 2198. Special Topics in Economics - Regional. 3 Credits.

Topics cover individual countries or regions of the world and vary depending on current issues of interest and faculty availability. Prerequisites: ECON 1011–ECON 1012. (Fall and spring).

ECON 2199. Special Topics in Economics. 3 Credits.

Topics vary depending on current issues of interest and faculty availability. Prerequisites: ECON 1011, ECON 1012. (Fall and spring).

ECON 3098. Variable Topics-Regional Econ. 1-9 Credits.

ECON 3105. Economic Forecasting. 3 Credits.

Theory and empirical analyses of economic trends and fluctuations; use of economic indicators and simple econometric models. Prerequisites: ECON 1011–ECON 1012; ECON 2102 or ECON 2104; ECON 2123. (Fall).

ECON 3142. Labor Economics. 3 Credits.

Analysis of labor supply and demand; measurement and theory of unemployment; occupational choice; wage differentials; labor market issues and policies. Prerequisite: ECON 1011–ECON 1012 and ECON 2101 or ECON 2103.

ECON 3148. Health Economics. 3 Credits.

Analysis of economic theories and applications to the demand for and supply of healthcare. Examination of the role of government in health care, public health, and unhealthy behavior (e.g., smoking). Credit may not be earned for both ECON 2148 and ECON 3148. Prerequisites: ECON 2101 or ECON 2103. (Spring).

ECON 3161. Public Finance: Expenditure Programs. 3 Credits.

Economic analysis of government spending and social regulation programs. Topics include public goods, externalities, income transfer and social insurance programs, and benefit-cost analysis of government programs. Prerequisite: ECON 1011–ECON 1012 and ECON 2101 or ECON 2103.

ECON 3162. Public Finance: Taxation. 3 Credits.

Economic analysis of taxes. Topics include individual and corporate income taxes, payroll taxes, sales and excise taxes, property and wealth taxes, design of tax systems, and effects of taxation on labor and capital markets. Prerequisite: ECON 1011–ECON 1012 and ECON 2101 or ECON 2103.

ECON 3165. Economics of Human Resources. 3 Credits.

Economic analysis of education and training, labor market discrimination, marriage and the family, and social security. Prerequisite: ECON 1011–ECON 1012 and ECON 2101 or ECON 2103.

ECON 3181. International Trade Theory. 3 Credits.

Rigorous examination of theories of international trade that explain why countries trade and their gains from trade. Theories include comparative advantage, the factor-proportions theory of trade, and recent theoretical developments. The course also deals with the theory of trade policies, such as tariffs and quotas. Credit cannot be earned for both ECON 2181 and ECON 3181. Prerequisites: ECON 2101 or ECON 2103; MATH 1221, MATH 1231, or MATH 1252. (Spring).

ECON 3190. Law and Economics. 3 Credits.

An introduction to the economic analysis of legal systems. How laws alter behavior and how laws might be designed to satisfy efficiency and fairness criteria. Prerequisite: ECON 1011–ECON 1012 and ECON 2101 or ECON 2103.

ECON 3191. Game Theory. 3 Credits.

An introduction to game theory, covering concepts such as Nash equilibrium, evolutionary games, backward induction and subgame perfection, Bayesian–Nash games of imperfect information, adverse selection, and moral hazard. Prerequisites: ECON 1011–ECON 1012 and ECON 2101.

ECON 3198. Advanced Topics in Economics - Regional. 3 Credits.

Topics cover individual countries or regions of the world and vary depending on current issues of interest and faculty availability. Prerequisites: Depending on the topic: ECON 2101 (or ECON 2103) or ECON 2102 (or ECON 2104) or ECON 2123. (Fall and spring).

ECON 3199. Advanced Topics in Economics. 3 Credits.

Topics vary depending on current issues of interest and faculty availability. Prerequisites: Depending on the topic: ECON 2101 (or ECON 2103) or ECON 2102 (or ECON 2104) or ECON 2123. (Fall and spring).

ECON 4198W. Proseminar in Economics. 3 Credits.

Preparation and presentation of a research paper in any field of economics agreed upon by student and instructor. Restricted to Economics majors in their senior year. Recommended background: ECON 2101 or ECON 2103, ECON 2102 or ECON 2104, and STAT 2112 or ECON 2123. (Fall and spring).

ECON 4199. Independent Research-Economics. 3 Credits.

Prerequisite: ECON 1011–ECON 1012 and completion of 12 hours of upper-division economics courses, including ECON 2101 or ECON 2103 and ECON 2102 or ECON 2104, with a minimum grade-point average of 3.4; and approval of an independent research project by a faculty member of the Economics Department.

ECON 6214. Survey of Mathematical Economics. 3 Credits.

For graduate students in fields other than economics. Differentiation, partial differentiation, and economic optimization problems; comparative statics; input-output analysis; difference, differential equations, and economic applications. Prerequisite: one semester of calculus and ECON 6217–ECON 6218.

ECON 6217. Survey of Economics I. 3 Credits.

Intermediate-level macroeconomic theory for graduate students in fields other than economics.

ECON 6218. Survey of Economics II. 3 Credits.

Continuation of ECON 6217. Intermediate-level macroeconomic theory for graduate students in fields other than economics. (ECON 6217 and ECON 6218–).

ECON 6219. Managerial Economics. 3 Credits.

Intermediate microeconomic theory, with emphasis on production and costs, market structure and pricing, risk analysis, and investment theory and capital budgeting. Credit can be earned for only one of ECON 6217 or ECON 6219.

ECON 6237. Economics of the Environment and Natural Resources. 3 Credits.

Analysis of public policy problems relating to the environment and natural resources development and management. Prerequisite: ECON 6217.

ECON 6239. Economics of Defense. 3 Credits.

Economic analysis applied to national security planning and objectives. Analysis of defense establishment problems, including manpower, the defense industry base, procurement policy. (Spring).

ECON 6248. Health Economics. 3 Credits.

Demand for medical care; organization of the health care delivery industry; policy issues on regulation, efficiency, and allocation of health care services. (Fall).

ECON 6249. Industrial Org-TComm Industry. 3 Credits.**ECON 6250. Survey of Economic Development. 3 Credits.**

An introduction to economic problems faced by less developed countries. Emphasis placed on applications to policy-making and evaluation. Prerequisite: Econ 6217 or 6280 or equivalent. (Spring).

ECON 6255. Economics of Technological Change. 3 Credits.

Economics of research and development; innovation and growth; the role of government in the development and use of new technology. (Fall).

ECON 6269. Economy of China I. 3 Credits.

Analysis of organization, operation, policies, and problems. Development of the economy since 1949.

ECON 6270. Economy of China II. 3 Credits.

Continuation of ECON 6269. Examination of critical problems of development. Prerequisite: ECON 6269 or permission of instructor.

ECON 6271. Economy of Japan. 3 Credits.

Analysis of Japanese economic institutions and their contribution to Japan's development. (Fall).

ECON 6280. Survey of International Economics. 3 Credits.

Introductory-level international trade and finance, primarily for Elliott School students. Topics include the economic effects of trade liberalization and protection, exchange rate determination, and macroeconomic policies in an open economy. Prerequisite: ECON 1011–ECON 1012.

ECON 6283. Survey of International Trade Theory and Policy. 3 Credits.

For graduate students in fields other than economics. Survey of international economics and policy; application of comparative advantage and other arguments for trade; impact of trade on a domestic economy; new arguments for protectionism; regional trading blocs. (Fall and spring).

ECON 6284. Survey of International Macroeconomics and Finance Theory and Policy. 3 Credits.

For graduate students in fields other than economics. Open-economy macroeconomics; international finance; balance of payments accounting; exchange markets; alternative models of balance of payments determination and adjustment; behavior of flexible exchange rate systems. (Fall and spring).

ECON 6285. Economic Development of Latin America. 3 Credits.

Diversity of structures of Latin American economies; import substituting industrialization; inflation; problems of underemployment and income distribution.

ECON 6286. Economic Development of Latin America. 3 Credits.

Continuation of ECON 6285. Structure of trade; protection, exports, and economic development; regional and global economic integration; foreign investment, multinational enterprise, and technology transfer.

ECON 6290. Principles of Demography. 3 Credits.

Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as GEOG 6290/ SOC 6290/ STAT 6290.

ECON 6291. Methods of Demographic Analysis. 3 Credits.

Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as GEOG 6291/ SOC 6291/ STAT 6291.

ECON 6292. Topics in International Trade. 3 Credits.

Topics on international trade issues and policy. Primarily for master's students in programs other than economics. May be repeated for credit if topic differs. (Fall and spring).

ECON 6293. Topics in International Finance. 3 Credits.

Topics on macroeconomic issues and policies in open economies, including exchange rate regimes, determinants of international capital flows, currency crises, financial contagion, current account sustainability and sovereign crises, fiscal problems, and macro-policies in emerging markets and mature economies. (Fall).

ECON 6294. Topics in Economic Development. 3 Credits.

Topics on economic development issues and policy vary depending on faculty availability and interest. Primarily for master's students in programs other than economics. May be repeated for credit if topic differs. (Fall and spring).

ECON 6295. Special Topics. 3 Credits.

Topics vary, depending on current issues of interest and faculty availability. (Fall and spring).

ECON 6298. Reading and Research. 3 Credits.

Limited to master's degree candidates.

ECON 6997. Independent Research. 1-3 Credits.

This course is limited to master's degree candidates in Economics. Before permission is granted to register for ECON 6997, the student must submit a written plan of study for the approval of the staff member of the department who will be directing the research. The written plan must also be approved by the program director. This course may be repeated once for credit but to no more than a total of 6 credits.

ECON 6998. Thesis Research. 3 Credits.**ECON 6999. Thesis Research. 3 Credits.****ECON 8301. Microeconomic Theory I. 3 Credits.**

Theory of unconstrained optimization; optimization subject to equality and inequality constraints, along with applications. Profit maximization, utility maximization and cost minimization, concave and quasi-concave functions, monotone comparative statics, duality theory, the envelope theorem and Le Chatelier principle, and the Kuhn-Tucker conditions. (Fall).

ECON 8302. Microeconomic Theory II. 3 Credits.

Expected utility theory, general equilibrium in a pure exchange economy and economy with production, welfare theorems and the core theory of the competitive firm in the short run and long run, monopoly and price discrimination, models of oligopoly. Prerequisite: ECON 8301.

ECON 8303. Microeconomic Theory III. 3 Credits.

Theory of games, including Nash equilibrium and its refinements and comparative statics, evolutionary game theory, multistage games and subgame perfection, repeated games and oligopolistic supergames, static and dynamic Bayesian games, auction theory, and bargaining theory. Prerequisite: ECON 8302.

ECON 8305. Macroeconomic Theory I. 3 Credits.

Alternative theories of income, employment, and the price level; impact of monetary and fiscal policy; role of expectations in the economy; and microfoundations of macroeconomic models and dynamic analysis. (Fall).

ECON 8306. Macroeconomic Theory II. 3 Credits.

Extensions of alternative models of income determination, economic growth, and the application of analytical frameworks to the U.S. and international economies. Prerequisite: ECON 8305.

ECON 8307. Macroeconomic Theory III. 3 Credits.

Extensions to stochastic and dynamic general equilibrium frameworks, with emphasis on economic policy. Prerequisite: ECON 8306.

ECON 8323. Monetary Theory and Policy I. 3 Credits.

Theory of monetary policy within the framework of contemporary American central banking.

ECON 8324. Monetary Theory and Policy II. 3 Credits.

Continuation of ECON 8323. Theory of monetary policy within the framework of contemporary American central banking.

ECON 8337. Environmental Economics. 3 Credits.**ECON 8341. Labor Economics I. 3 Credits.**

Theory of wages and employment, analysis of labor supply and demand. Analysis of unemployment; unions; wage regulation.

ECON 8342. Labor Economics II. 3 Credits.

Continuation of ECON 8341. Theory of wages and employment, analysis of labor supply and demand. Analysis of unemployment; unions; wage regulation.

ECON 8345. Industrial Organization I. 3 Credits.

Economic theory and evidence regarding industrial market structure, conduct, and economic performance.

ECON 8346. Industrial Organization II. 3 Credits.

Continuation of ECON 8345. Economic issues in antitrust and government regulation of the U.S. economy.

ECON 8351. Development Economics I. 3 Credits.

Major analytic concepts, measures, theoretical models, and empirical methods of development economics.

ECON 8352. Development Economics II. 3 Credits.

Continuation of ECON 8351. In-depth examination of special research topics with emphasis on methods in applied microeconomics.

ECON 8357. Regional Economics. 3 Credits.

Study of regional planning and growth models, including input-output, programming, and econometric models used by planning agencies; analysis of interregional production, trade, migration, firm location, and pricing models. (Fall).

ECON 8358. Urban Economics. 3 Credits.

Analysis of spatial relationships among economic activities within an urban area including the urban land, labor, and housing markets; urban transportation models; fiscal relationships among jurisdictions. (Spring).

ECON 8363. Public Finance I. 3 Credits.

Theoretical and empirical analysis of the economic role of the public sector and the effects of public expenditures on resource allocation and income distribution. Topics include public goods, externalities, social insurance, and benefit-cost analysis. (Fall).

ECON 8364. Public Finance II. 3 Credits.

Theoretical and empirical analysis of the effects of taxes and transfers on the allocation of resources and income distribution. Topics include partial and general equilibrium models of tax incidence, effects of taxes on labor supply, saving, and portfolio choices of households and on investment and financing decisions of firms. (Spring).

ECON 8375. Econometrics I. 3 Credits.

Statistical foundations for econometrics; standard methods of estimation and inference for classical and generalized regression models. Same as STAT 8375.

ECON 8376. Econometrics II. 3 Credits.

Topics may include asymptotic theory, statistical endogeneity, instrumental variables estimation, discrete and limited dependent variable models, and time-series models. Same as STAT 8376. Prerequisite: ECON 8375.

ECON 8377. Econometrics III. 3 Credits.

Econometric methods for systems of equations and panel data, with additional topics that may vary from year to year. Prerequisite: ECON 8376.

ECON 8378. Economic Forecasting. 3 Credits.

Introduction to the theoretical and applied aspects of economic forecasting. Topics include the role of forecasting, univariate time-series analysis, single equation models, multiple series models, and evaluation of forecasts. Prerequisite: ECON 8375 or permission of instructor.

ECON 8379. Laboratory in Applied Econometrics. 0-3 Credits.

Application of econometric theory and the use of econometric software; students are required to write an empirical research paper. The course usually deals exclusively with either micro or macroeconomic issues. May be repeated for credit provided the topic differs.

ECON 8381. International Trade Theory. 3 Credits.

International trade theory, including alternative models of the gains from trade and evaluations of the new justifications for protectionism, and analysis of commercial policy, factor flows, and trade and investment with multinational corporations. Prerequisite: most sections require calculus or permission of instructor.

ECON 8382. International Finance and Open-Economy Macroeconomics. 3 Credits.

International finance, including alternative models of balance of payments behavior and adjustment, payments accounting, exchange markets, and alternative exchange-rate regimes. (Spring).

ECON 8383. International Financial Markets. 3 Credits.

Financial economics and international financial markets. Topics include standard asset pricing theory, uncertainty in open economy macroeconomics models, financial market micro-structure, and incomplete markets. (Fall).

ECON 8395. Advanced Special Topics. 3 Credits.

Topics vary depending upon current interests and faculty availability. Open to graduate students in economics. May be repeated for credit.

ECON 8397. Dissertation Proposal Seminar. 3 Credits.

Limited to Doctor of Philosophy candidates in Unit II. Critical analysis of current research. Formulation of a dissertation proposal and development of dissertation research strategies.

ECON 8997. Independent Research. 3 Credits.

This course is limited to doctoral degree candidates in Economics. Departmental approval required to register. Before permission granted to register for ECON 8997, the student must submit a written plan of study for the approval of both the faculty member of the department who will be directing the research. And the Director of Graduate Studies for the PhD Program or the Department Chair. May be repeated for a total of 6 credits.

ECON 8998. Advanced Reading and Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

ECON 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

EDUCATIONAL LEADERSHIP (EDUC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EDUC 0920. Continuing Research - Masters. 1 Credit.**EDUC 0940. Cont Research: Doctoral. 1 Credit.****EDUC 2701. Museums as Cultural and Educational Resources. 3 Credits.**

A general introduction to museums as institutions, sources of information, and places for enjoyment. Classes take place on campus and at museums in the metropolitan area. Admission by permission of instructor. (Spring).

EDUC 3002. Special Workshops. 3 Credits.**EDUC 6100. Experimental Courses. 1-12 Credits.**

Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

EDUC 6101. Research and Independent Study. 1-3 Credits.

Individual research under guidance of a staff member. Program and conferences arranged with an instructor.

EDUC 6112. Quant Meth I: Intro-Survey Meas. 3 Credits.**EDUC 6114. Introduction to Quantitative Research. 3 Credits.**

Development of a conceptual understanding of research design and quantitative analysis options for the consumer of research. Appropriate use of vocabulary and interpretation of research findings. Critique of research articles and/or development of a small-scale proposal. (Fall, spring, and summer).

EDUC 6116. Introduction to Educational Statistics. 3 Credits.

Fundamentals of descriptive statistics and hypothesis testing; introduction to inferential statistics and research design, distinguishing between nonexperimental, quasi-experimental, and true experimental designs. Designed for those with little preparation in quantitative methods or who are not prepared for Educ 8120.

EDUC 6232. Supervision and Evaluation of Instruction. 3 Credits.

The roles and functions of educational leaders in the areas of curriculum, staff development, instructional supervision, and evaluation of personnel. Theory and practice to increase teacher effectiveness and improve student learning through supervisory strategies. (Fall, spring, and summer).

EDUC 6234. Site-Based Leadership: K-12. 3 Credits.

A general introduction to the principalship. Stresses leadership theory, roles, and management tasks in instruction, curriculum, budget, staff development, supervision, interagency services, student learning, and policy considerations. Site-based management and communication within a changing and diverse school environment. (Fall, spring, and summer).

EDUC 6236. School Law and Policy. 3 Credits.

The legal basis of education and public schools in the United States. Constitutional provisions and federal statutes that guide school law. Legal factors that influence school policy. Consideration of practical school situations for legal implications, development of skills to research legal issues affecting schools, and preventive law measures. (Fall, spring, and summer).

EDUC 6240. Fundamentals of Educational Leadership and the Change Process. 3 Credits.

Current leadership theory and systems behavior in the context of administrative practice in educational settings. Key elements of leadership and management. The impact of context, culture, power, politics, change, communications, and organizational learning on administration. (Fall, spring, and summer).

EDUC 6242. Administrative Issues in Education. 3 Credits.

The impact of major social, political, economic, and education issues on the role of school leaders and the delivery and quality of programs and services. (Fall, spring, and summer).

EDUC 6244. School-Community Relations. 3 Credits.

The purpose, scope, essential elements, and impact of a successful school-community relations program. Community power structures, the roles of policy and leadership, communication techniques for interacting with various audiences and the media, evaluation of public relations and marketing for educational institutions. (Fall).

EDUC 6246. Seminar: Applied Educational Administration. 3-6 Credits.

Application of the theories and principles of administration to public and private schools. Field experience in a phase of administration and supervision. Admission by permission of instructor.

EDUC 6252. Human Relations Diversity. 3 Credits.

Application of current theory and research findings in human relations to staff motivation, change, conflict management, and communication techniques for working with individuals and groups within organizations.

EDUC 6256. School Business Management. 3 Credits.

Management and control of the business functions of school districts. Assessing, planning, developing, and presenting educational budgets; the legal contexts affecting school business management. Risk management and school-site budgeting. (Fall).

EDUC 6258. School Finance. 3 Credits.

The financing of public elementary and secondary education in the United States; current revenue sources, distribution decisions, and trends in the fiscal operations of schools. Litigation, finance policies, and equitable investments of public monies. (Fall, spring, and summer).

EDUC 6260. Practicum in Supervision. 3-6 Credits.

Practical experience in supervision of instruction. Admission by permission of instructor.

EDUC 6262. Internship in Supervision and Instructional Leadership. 3-6 Credits.

Service in a school situation directed by the University's faculty and school systems; integration of theory and practice.

EDUC 6264. Problems and Practices in Staff. 3 Credits.

Application of principles and practices concerned with change and evaluation of educational administration.

EDUC 6287. Internship: Administration. 3-6 Credits.

Service in an educational institution or education-related program directed by the University's faculty.

EDUC 6314. History of American Education Reform. 3 Credits.

An examination of how evolving social, economic, and political forces have propelled and opposed American education reform efforts throughout history. (Fall).

EDUC 6368. Power, Leadership & Education. 3 Credits.

A general introduction to issues of leadership applicable to education settings and to key features of educational organization, including schools, school systems, colleges and universities, and advocacy organizations. Leadership as a process and set of skills. The interaction between leadership styles and organizational contexts.

EDUC 6371. Education Policy. 3 Credits.

An introduction to the development, implementation, and assessment of education policies at national, state, and local levels. (Fall and spring).

EDUC 6381. Program Evaluation: Theory and Practice. 3 Credits.

Introduction to the theory of social program evaluation, alternative evaluation models and methodologies, and the political and social contexts of evaluation.

EDUC 6388. Analysis of Education Policy Issues. 3 Credits.

Covers a range of education policy options, assessing their advantages and disadvantages based on evidence, and drawing implications for policy formulation. A critical approach is applied to the assigned readings, questioning the sources of evidence, appropriateness of analysis, and validity of the findings. Prerequisite: EDUC 6371, EDUC 6114, or permission of instructor.

EDUC 6392. Practicum in Educational Policy Program Evaluation. 3-6 Credits.

Supervised practical experience in field placements. Admission by permission of instructor. Prerequisite: EDUC 6381.

EDUC 6401. Applying Educational Media and Technology. 3 Credits.

Theory and practice of educational technology. Key characteristics of different media, principles of application, and issues concerning their appropriate use.

EDUC 6402. Computers in Education and Human Development. 3 Credits.

The research and practice surrounding the use of computers in educational and training settings. Students will acquire the practical knowledge necessary to the development and evaluation of computer-related curricula through projects and case studies.

EDUC 6403. Educational Hardware Systems. 3 Credits.

Design and implementation of educational hardware systems, including computers and computer networks.

EDUC 6404. Managing Computer Applications. 3 Credits.

For managers and prospective managers in education and human services who are concerned with the automation of their operations. Basic principles needed to design, implement, and manage an information system. Admission by permission of instructor.

EDUC 6405. Developing Multimedia Materials. 3 Credits.

The design, development, integration, and use of multimedia resources in education and training settings. Students examine and critique multimedia technologies, develop instructional materials, and create a unit or module that applies instructional design theory.

EDUC 6406. Instructional Design. 3 Credits.

Designing, implementing, and evaluating instructional strategies for learners. Assessing needs, writing objectives, selecting curriculum/content, selecting and implementing methods and techniques, selecting appropriate devices and evaluating instruction.

EDUC 6407. Design and Implementation of Educational Software. 3 Credits.

Theory and practice of creating educational software; psychological basis of using software in learning; instructional programs; authoring tools; artificial intelligence applications; interactive media. Students design and evaluate an educational program. Prerequisite: EDUC 6401 or permission of instructor.

EDUC 6421. Critical Issues in Distance Education. 3 Credits.

Historical, conceptual, theoretical, and practical issues associated with distance education as a foundation for research and practice in the domain of distance education as well as adult learning, educational systems design, and school administration and policy.

EDUC 6422. Instructional Needs Analysis. 3 Credits.

An introduction to the role of instructional needs analysis and assessment. The design and development of instruction. Key elements of the instructional design cycle, including data analysis.

EDUC 6423. Technology and Disabilities. 3 Credits.

Assistive technology as it impacts the lives of people with disabilities, including the performance of tasks related to employment, education, and activities of daily living.

EDUC 6424. Learning Technologies and Organizations. 3 Credits.

The role of learning technology in organizations, learning in the workplace, and knowledge management in corporations, schools, and universities.

EDUC 6425. Developing Effective Training with Technology. 3 Credits.

Development of skills in planning and producing effective technology-rich training that meets institutional and organizational needs.

EDUC 6426. Computer Interface Design for Learning. 3 Credits.

Human-computer interaction, both in general and with emphasis on issues in education. General design aspects; theories, principles, and guidelines related to human-computer interaction.

EDUC 6427. Advanced Instructional Design. 3 Credits.

Development of a prototype instructional design project and documentation report requiring rapid design and development strategies.

EDUC 6428. Developing Digital Professional Portfolios. 3 Credits.

Students create a digital professional portfolio, using advanced skills in the design, development, integration, and use of multimedia resources.

EDUC 6441. Internship in Educational Technology Leadership. 3 Credits.

Students are assigned to a cooperating agency and work in consultation under the guidance of the course instructor. Admission by permission of instructor.

EDUC 6442. Educational Technology Leadership Master's Project. 1-6 Credits.

Students design, develop, implement, and evaluate an individual project. Admission by permission of instructor.

EDUC 6500. Intro Stu Aff & Higher Ed. 3 Credits.

Introduction to the study of higher education and the student affairs profession, including the ways in which broader aspects of higher education research, theory and policy inform the work of student affairs practitioners. Historical and current contexts of American higher education, the academic community, and existing issues and emerging challenges surrounding the practice of student affairs in the current higher education landscape.

EDUC 6510. Administration of Higher Education. 3 Credits.

Government, organization, and administration of colleges and universities; duties of trustees and administrators.

EDUC 6520. Foundations of College Student Development. 3 Credits.

College student development theories, practices, and problems, including historical overview and human development theories related to college students.

EDUC 6525. Managing College Student Services Programs. 3 Credits.

An overview of student affairs administrative practices, including planning models, budgeting, policy development, program development, facility management, and team building. Admission by permission of instructor.

EDUC 6530. Intercultural Campus Ldrshp. 3 Credits.

This course is designed to explore intercultural leadership skills through the lens of understanding group identity differences, multicultural competence, and the foundations of effective advocacy for social justice. Lectures, readings, class discussions, written assignments, and experiential activities are used to promote an understanding of intercultural leadership skills to help create inclusive learning environments. The course will explore how oppression and privilege relate to differences based on gender, race and ethnicity, sexual orientation, and (dis)ability. Students will also study how these identities intersect with each other.

EDUC 6540. Group and Organizational Theories. 3 Credits.

Review of major organizational theories inside and outside higher education, including systems, institutional, cultural, cognitive, environmental, ecological, as well as power and influence.

EDUC 6550. Assessment in Higher Ed. 3 Credits.

Key concepts in the assessment of outcomes in higher education and in student affairs. History of the assessment movement in higher education, strategies and methods for measuring outcomes of the college experience, identifying the limitations of operational processes that can be improved, and current issues in measuring student success in higher education.

EDUC 6555. Higher Education Policy. 3 Credits.

Assessment of policies that impact higher education, including the relationship of K-12 policy to higher education. Policy networks and mechanisms of policymaking. Policy development and assessment.

EDUC 6560. Legal Problems in Higher Education. 3 Credits.

Investigation of legal problems in higher education related to the legal structure of higher education, religious concerns, students, faculty, and academic programs.

EDUC 6565. Financing Higher Education. 3 Credits.

Analysis of private, state, federal, and other revenue sources; strategic planning, program budgets, and financial methods and practices.

EDUC 6570. Educational Planning. 3 Credits.

An examination of the planning movement in education: its historical development and the recent shift in premises, context, and expectations. Different approaches to the planning process; its role in research; and overview of main analytical techniques currently in use.

EDUC 6572. Dynamics of Change. 3 Credits.

An analysis of the process of change, particularly as it relates to educational policy. Comparison of theories; analytical tools; historical precedents; examples of federal education policies.

EDUC 6575. Personnel Administration. 3 Credits.

Human resource management: planning, recruitment, selection, placement and induction, staff development, rewards, and negotiations. Issues and legislation that influence personnel functions and policy; communication skills for human resource leadership.

EDUC 6579. Managing Multicultural Environments. 3 Credits.

Application of multicultural research in identifying key elements for managing diverse environments, communicating with families, planning professional development activities, and increasing student learning.

EDUC 6585. Master's Internship in Higher Education Administration. 3-6 Credits.

Supervised field experience in higher education settings. Admission by permission of instructor.

EDUC 6601. International and Comparative Education. 3 Credits.

Theoretical foundations of comparative and international education; systematic investigation of the structure and practices of selected representative school systems in different parts of the world. Emphasis on development of methodologies for comparative study.

EDUC 6602. Regional Studies in International Education. 3 Credits.

In-depth study of education in a selected region of the world. Structures and issues facing education systems in social, political, economic, cultural, and historical context. Prospects of education for human national development. May be repeated for credit provided the region differs.

EDUC 6610. Programs and Policies in International Education. 3 Credits.

Overview of policies and programmatic responses to issues in international education. Topics include education and development, international higher education and student services, and education and marginalized people. May be repeated for credit provided the topic differs.

EDUC 6615. Internationalizing U.S. Schools. 3 Credits.

EDUC 6620. Strategies and Analysis in International Education. 3 Credits.

Strategies for improving education in international contexts. Topics include education and development, international higher education and student services, or education and marginalized people. May be repeated for credit provided the topic differs.

EDUC 6630. International Experiences. 1-6 Credits.

Study and research in a foreign country as part of a group program. Admission by permission of the instructor.

EDUC 6631. Internship: International Education. 1-6 Credits.

Service in an international education institution or related individually designed program planned to enable the student to connect theory to practice. Admission by permission of instructor.

EDUC 6640. Selected Topics in International Education. 3 Credits.

Current trends, themes, and issues in international education. May be repeated for credit provided the topic differs.

EDUC 6650. Education and National Development. 3 Credits.

In terms of the basic assumption that education contributes to national development, the course examines the role education plays in the process of national development in advanced industrial societies and societies moving to industrialism.

EDUC 6660. Capstone in International Education. 3 Credits.

Review of core topics in international education and completion of major supervised project or paper. Taken near the end of the master's program in lieu of the Comprehensive Examination.

EDUC 6701. Museums as Institutions I: Fundamentals. 3 Credits.

An overview of the museum as an environment for learning, considering the influence of institutional history and organizational structure on the museum's mission of serving the public. (Fall, spring, and summer).

EDUC 6702. Facilitating Museum Learning I: Fundamentals. 3 Credits.

Theory of and practice in the development of communication skills in the museum. Educational concepts; teaching strategies and techniques; institutional liaison and group process. (Fall, spring, and summer).

EDUC 6703. Museum Audiences. 3 Credits.

A survey of the museum's diverse audience, emphasizing implications for effective programming, with attention to audience research. Preparation of a programming plan in cooperation with a museum. (Fall, spring, and summer).

EDUC 6704. Facilitating Museum Learning II: Field Placement and Seminar. 3-6 Credits.

Two-day-a-week placement in area schools or other educational institutions supervised by GW faculty. On-campus seminar focuses on human development and learning theory. (Fall, spring, and summer).

EDUC 6705. Museums as Institutions II: Field Placement and Seminar. 6 Credits.

Supervised experience in education departments in area museums; students carry out projects in cooperation with the site. On-campus seminar includes presentations by leading practitioners. (Fall, spring, and summer).

EDUC 6706. Evaluating Museum Learning. 3 Credits.

Evaluation and research methods appropriate to the museum setting. Review of research on museum audiences; designing exhibition and program evaluations. (Fall, spring, and summer).

EDUC 6707. Museum Proposal Writing. 3 Credits.

The preparation of proposals for museum, educational, and non-profit applications for support from public and private funders. Proposals are developed in cooperation with organizations in the DC metropolitan area. (Fall, spring, and summer).

EDUC 6709. Interpretation in the Historic House Museum. 3 Credits.

Seminar integrating advanced practices of museum education with current scholarship in architectural history, material culture, and social history. Extensive use of Washington museum resources. Same as AMST 6709. Admission by permission of instructor.

EDUC 6710. Museums and Technology. 3 Credits.

Applications of technology that link the public with the museum: Internet exhibitions, interactive computer programs, video conferencing, the electronic classroom. Guest lectures, field trips, and group projects. (Fall, spring, and summer).

EDUC 6711. Museum as a Learning Environment. 3 Credits.

Exploration of why visitors frequent museums and how they create personal meaning. Approaches to support the audience's engagement with the museum's resources. (Fall, spring, and summer).

EDUC 6998. Thesis Research. 3 Credits.**EDUC 6999. Thesis Research. 3 Credits.****EDUC 8100. Experimental Courses. 1-12 Credits.**

Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

EDUC 8101. Research and Independent Study. 1-3 Credits.**EDUC 8110. Advanced Study: Ideas, Issues, and Practices in Education. 3 Credits.**

For precandidates for the Ed.D. Alternative means of responding to the complexities of the educational process. Topics vary but concern education as an individual process and as sociocultural preservation and renewal. May be repeated for credit.

EDUC 8120. Group Comparison Designs and Analyses. 3 Credits.

Designs and analyses to assess differences for more than two groups when compared on one dependent variable. Fixed, random, and mixed effects ANOVA and ANCOVA models and multiple comparison tests. Nonparametric tests. Prerequisite: EDUC 6116 .

EDUC 8122. Qualitative Research Methods. 3 Credits.

A general introduction to several major qualitative research traditions (e.g., biography, grounded theory, ethnography, phenomenology, and case study). Application of qualitative research design and procedures, including preliminary data collection, analysis, and writing.

EDUC 8130. Survey Research Methods. 3 Credits.

Techniques used to collect an array of information from a large number of people through structured interviews and mailed, e-mailed, or web-based questionnaires. Defining the research question and design; sampling, survey development, data collection procedures, pretesting, and data handling. Prerequisite: EDUC 8120, EDUC 8122.

EDUC 8131. Case Study Research Methods. 3 Credits.

Techniques used to examine one or a few complex cases, collecting data from several types of sources and by several methods. The course covers design, data collection, and data analysis/integration. Prerequisite: EDUC 8122.

EDUC 8140. Ethnographic Research Methods. 3 Credits.

Techniques used to examine systematically the contemporary daily life of a given group in its natural setting, focusing on culture—the recurring patterns of thought and social relations. Issues of research design and data collection and analysis. Prerequisite: EDUC 8122.

EDUC 8142. Phenomenological Research Methods. 3 Credits.

Techniques used to elicit and recognize perceptions, interpretations, motives, expectations, and imaginations. The framing of appropriate research questions, data collection and analysis, and the statement of conclusions. Prerequisite: EDUC 8122.

EDUC 8144. Discourse Analysis. 3 Credits.

Techniques used to examine verbal and nonverbal communication to understand identity, beliefs, intentions, relationships, and culture. The framing of appropriate research questions; data collection and analysis. Prerequisite: EDUC 8122.

EDUC 8170. Educational Measurement. 3 Credits.

Classical and modern measurement theory, item response theory, and factor analysis. Educational and psychological instrument development and validation. Interpretation of scale scores and assessment of instrument adequacy. Prerequisite: EDUC 8120.

EDUC 8171. Predictive Designs and Analyses. 3 Credits.

Techniques used to assess how independent variables are related to one dependent variable. Simple regression, multiple linear regression, and logistic regression. Appropriate research questions, data interpretation, and design. Prerequisite: EDUC 8120.

EDUC 8172. Multivariate Analysis. 3 Credits.

Techniques for assessment of relationships among multiple independent variables and dependent variables. Multivariate analysis of variance (MANOVA), multivariate analysis of covariance (MANCOVA), discriminant analysis, and exploratory factor analysis. Prerequisite: EDUC 8171.

EDUC 8173. Structural Equation Modeling. 3 Credits.

Multivariate techniques used for assessment of structural (causal) relations among latent (unobserved) variables with multiple observed indicators: observed and latent variable path analysis and confirmatory factor analysis. Latent means analysis and latent growth modeling. Prerequisite: EDUC 8171.

EDUC 8276. Seminar: Administration and Supervision. 1-12 Credits.**EDUC 8280. Critical Review of Educational Leadership Literature. 1,3 Credit.**

The techniques, tools, and presentation of critical reviews and syntheses of educational literature used to inform forthcoming research. Systematic mapping of what is known and deriving research questions, conceptual frameworks, and applicable methods. Prerequisite: an approved dissertation topic or permission of instructor.

EDUC 8320. The Politics of Education. 3 Credits.

Examination of the contextual factors (political, economic, and historical) and the nature of political decision making on education issues, primarily at the state and local level. Prerequisite: EDUC 6371.

EDUC 8321. Economics of Education. 3 Credits.

Economic analysis as it pertains to educational systems and their impact on economic growth. Economic aspects of the conduct and evaluation of policy. Economic principles and theories applied to education problems such as productivity and cost analyses. Prerequisite: EDUC 6371 and EDUC 8120.

EDUC 8322. Education Policy Implementation. 3 Credits.

The evolution and implementation of education policies. Analysis of policy implementation at various levels and types of educational systems. Policy is analyzed as a process and as it interacts with organizational, social, economic, and political factors. The impediments of effective implementation. Prerequisite: EDUC 6371.

EDUC 8323. Policies of Education Equity. 3 Credits.

Analysis of the development, implementation, and evaluation of education equity policies, with consideration of their context, formulation, and application. Prerequisite: EDUC 6371.

EDUC 8325. Policy Design: Accountability in Education. 3 Credits.

Issues of policy design that underlie the push for greater accountability in education. Students review research articles and conceptual argument, discuss evidence on actual practice, and identify strengths and weaknesses of a range of policy tools. Prerequisite: EDUC 6371.

EDUC 8329. Seminar in Program Evaluation. 3 Credits.

Contemporary problems and issues in evaluation of social programs: design, implementation, analysis, and utilization. Prerequisite: EDUC 6381 and approval of instructor.

EDUC 8334. Doctoral Internship in Educational Policy. 3-6 Credits.

Methods of analysis used in the study of educational policy issues. Case studies on a range of policy issues and trends, including testing and accountability, school finance, school choice, and the federal role. Prerequisite: EDUC 6371, EDUC 6114, or permission of instructor.

EDUC 8340. Methods of Policy Analysis in Education. 3 Credits.

Methods of analysis used in the study of educational policy issues. Case studies on a range of policy issues and trends, including testing and accountability, school finance, school choice, and the federal role. Prerequisite: EDUC 6371, EDUC 6114, or permission of instructor.

EDUC 8345. Advanced Studies in Educational Policy Analysis. 1-12 Credits.

The process by which education policies are designed, adopted, and implemented by education systems. Case studies of specific policies, examining their assumptions and objectives, the criteria for assessing their effectiveness, and their governance at federal, state, and local levels. Prerequisite: EDUC 6371, EDUC 8120, or permission of instructor.

EDUC 8505. Seminar: Higher Education Administration. 1-12 Credits.**EDUC 8525. College and University Curriculum. 3 Credits.**

Development, patterns, creative design, issues, problems, evaluation, and trends in the higher education curriculum.

EDUC 8530. Leadership in Higher Education. 3 Credits.

Cognitive leadership theory as articulated in higher education: what leadership is, how it works, how it is practiced, how it is considered by scholars and practitioners, and how it is researched.

EDUC 8540. History of Higher Ed. 3 Credits.

History, philosophy, scope, purpose, present status, programs, and trends in higher education in the United States.

EDUC 8560. Case Studies in Higher Education Administration. 3 Credits.

An analysis of case studies related to administrative functions in colleges and universities.

EDUC 8565. College and University Governance. 3 Credits.

Organizational and administrative structures, patterns, and relationships in higher education.

EDUC 8580. The Community/Junior College. 3 Credits.

The two-year college as it relates to secondary education, four-year colleges, and universities. Objectives, curricula, students, faculty, legal concerns, and special problems of two-year colleges.

EDUC 8582. Administration and Governance of Two-Year Colleges. 3 Credits.

A study of the community/junior college, focusing on administrative and governance patterns and national, regional, state, and local influences, as well as the theory and structure of two-year college organization.

EDUC 8585. Doctoral Internship in Higher Education Administration. 3-6 Credits.

Service in a higher education situation directed by the University and the cooperating institution to integrate theory and practice. Admission by permission of instructor.

EDUC 8594. Current Issues in Higher Education. 3 Credits.

Analysis of contemporary issues in higher education practice and scholarship.

EDUC 8998. Pre-Dissertation Seminar. 3-6 Credits.

Required of all departmental Ed.D. degree candidates. Approval of the dissertation research proposal by the dissertation committee is necessary for successful completion of the seminar. Admission by permission of instructor.

EDUC 8999. Dissertation Research. 3,6 Credits.

Prerequisite: EDUC 8998.

ELECTRICAL & COMPUTER ENGRING (ECE)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ECE 1010. Introduction to Electrical, Computer, and Biomedical Engineering. 1 Credit.

Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills.

ECE 1020. Introduction to Electrical, Computer, and Biomedical Engineering. 1 Credit.

Continuation of ECE 1010. Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills.

ECE 1120. C Programming for ECE. 3 Credits.

Basic programming concepts including algorithmic thinking and structured programming, control flow, data types, pointers, functions, algorithms, I/Os, threads, and performance evaluation and optimization. Concurrency and multicore programming using threads, processes as well as parallel C programming paradigms. Controlling hardware devices and fine control via interfacing with assembly language.

ECE 1125. Data Structures&Algorithms ECE. 3 Credits.

Fundamentals of algorithms and data structures for electrical and computer engineering. Topics include techniques to solve problems through programming in C/C++ languages, linked lists, stacks, queues and trees; searching methods such as binary trees, hashing, and multi-way trees; design and analysis of algorithms and their space and time complexity. (Fall).

ECE 2110. Circuit Theory. 4 Credits.

Lecture (3 hours), laboratory (3 hours). Circuit elements, techniques of circuit analysis; circuit theorems; operational amplifiers; RLC circuits; natural and step responses; series, parallel and resonant circuits; sinusoidal steady-state analysis; phasers; power calculations; transformers; two-port circuits. CAD tools used in circuit projects. Corequisite: APSC 2113, PHYS 1022.

ECE 2115. Engineering Electronics. 4 Credits.

Lecture (3 hours), laboratory (3 hours). Solid-state devices used in electronic engineering. Physics of their operation. Application to electronic circuits. Primary emphasis on application of these elements in power supplies and in linear amplifiers. Design concepts through use of SPICE and graphical techniques. Prerequisite: ECE 2110.

ECE 2120. Engineering Seminar. 0-1 Credits.

This seminar course provides electrical and computer engineering students with a detailed view of the electrical and computer engineering professions. Speakers from within and outside of the department discuss facets of ECE, engineering education, and other important department, college, or university topics of interest. (Fall).

ECE 2140. Design of Logic Systems I. 4 Credits.

Lecture (3 hours), laboratory (3 hours). Boolean algebra; combinational and sequential circuits; minimization techniques; design-and-build logic subsystems, such as decoders, multiplexers, adders, and multipliers; use of CAD tools. Corequisite: ECE 2115.

ECE 2210. Circuits, Signals, and Systems. 3 Credits.

Circuit analysis using Laplace transforms; transfer functions; poles and zeroes; Bode diagrams; effects of feedback on circuits; convolution; Fourier series and Fourier transforms; design of filters; CAD tools used in design of projects. Prerequisite: ECE 2110.

ECE 2810. Biomedical Engineering Seminar I-II. 1 Credit.

ECE 2810 and ECE 2815 are taken in sequence by students in the biomedical engineering major. Overview of the field of biomedical engineering, including biomechanics, bioinformatics, telemedicine, instrumentation, and medical imaging.

ECE 2815. Biomedical Engineering Seminar I-II. 1 Credit.

ECE 2810 and ECE 2815 are taken in sequence by students in the biomedical engineering major. Overview of the field of biomedical engineering, including biomechanics, bioinformatics, telemedicine, instrumentation, and medical imaging.

ECE 3125. Analog Electronics Design. 4 Credits.

Design, testing, and measurement of analog electronic circuits. Differential and multistage amplifiers. Output stages and power amplifiers. Frequency response of amplifiers, high-frequency models of FETs and BJTs. Introduction to feedback circuit topologies. Use of electronic CAD tools, such as P-SPICE. Prerequisite: ECE 2115.

ECE 3130. Digital Electronics and Design. 4 Credits.

Lecture (3 hours), laboratory (3 hours). Design and testing of logic gates, regenerative logic circuits, and semiconductor memory circuits. Implementation of such circuits with NMOS, CMOS, TTL, and other integrated circuit technologies. Use of electronic CAD tools, such as SPICE. Prerequisite: ECE 2140.

ECE 3135. Design of Logic Systems II. 4 Credits.

Lecture (3 hours), laboratory (3 hours). Introduction of ASIC design techniques; design and programming of FPGAs using CAD tools; timing in sequential circuits; essential hazards; races in sequential circuits; design-and-build FPGA project. Prerequisite: ECE 2140.

ECE 3215. Analog Signals and Systems. 3 Credits.

Applications of matrix theory and linear graphs to electrical network analysis; network equations; state-space formulation and solution, Fourier transforms and spectra in electrical systems. Network functions; analysis and synthesis of analog filters, the approximation problem; realization of filters. Prerequisite: ECE 2210, 2115.

ECE 3220. Intro to Digital Signal Proces. 0-3 Credits.

Signal representation, sampling and quantization, discrete-time signals, z-transforms and spectra, difference equations. Fourier analysis. Discrete Fourier transform, IIR and FIR filter design. Prerequisite: ECE 2210.

ECE 3225. Signal and Image Analysis. 3 Credits.

Introduction and clinical applications; characteristics of biomedical problems, time- and frequency-domain techniques for signal feature analysis; spectral estimation and analysis; autoregressive modeling; detection and estimation of periodicity; digital images as two-dimensional signals; 2-D Fourier transform. Corequisite: ECE 2210, ApSc 3115.

ECE 3310. Introduction to Electromagnetics. 3 Credits.

Maxwell's equations, pulse propagation in one dimension, transmission line equations, reflection coefficient, capacitance and inductance calculations, Smith chart, plane waves, reflection from a dielectric of fiber and integrated optics. Prerequisite: APSC 2113, PHYS 1022.

ECE 3315. Fields and Waves I. 3 Credits.

Complex phasor notation, uniform transmission lines, standing wave ratio, power, reflection coefficient, impedance matching. Review of vector analysis and numerical methods. Electrostatics, generalizations of Coulomb's law, Gauss's law, potential, conductors, dielectrics, capacitance, energy. Prerequisite: APSC 2113; PHYS 1022.

ECE 3410. Communications Engineering. 3 Credits.

Fourier series and Fourier transform in relation to signal analysis. Convolution and linear filtering. Signal bandwidth and sampling theorem. Analog modulation. Random variables and stochastic processes; power spectrum. Digital modulation: BPSK, QPSK, MSK. Pulse code modulation, DPCM and delta modulation. Prerequisite: APSC 3115, ECE 2210.

ECE 3415. Introduction to Computer Networks. 3 Credits.

Types of networks. Circuit and packet switching. Layered network architectures. Electrical interfaces. Parity checking and CRC error detection codes. Automatic-repeat-request protocols. Routing. Flow and congestion control. Multiple-access protocols. LAN standards. Internetworking and transport layer protocol. Prerequisite: APSC 3115.

ECE 3420. Communications Laboratory. 1 Credit.

Experiments supporting communications systems. Fourier analysis and Fourier transform. Sampling theorem, filtering, and aliasing. Amplitude modulation (AM), frequency modulation (FM), quantization, and pulse code modulation (PCM). Delta modulation. Binary phase shift keying (BPSK). Quadrature phase shift keying (PSK). Prerequisite or corequisite: ECE 3410.

ECE 3425. Data Communications Laboratory. 1 Credit.

Experiments in support of the analysis and design of communications systems with emphasis on network protocols. Time and frequency division multiplexing, flow control, automatic repeat request, interfacing, token ring, token bus, multiple access for Ethernet, routing, packet switching. Prerequisite or corequisite: ECE 3415.

ECE 3430. Simulation of Communications Systems. 3 Credits.

Representation and simulation of deterministic and random signals and systems. Modeling of communication systems; performance measures and statistical methods for the interpretation of simulation results. Simulation techniques and technology in communications. Case studies. Corequisite: ECE 3415 . May be taken for graduate credit.

ECE 3515. Computer Organization. 3 Credits.

Structure and operation of a digital computer. Design of computer arithmetic units, data and instruction paths. Microprogramming; memory technology; virtual memory; caches; pipelined computer organization; characteristics of secondary storage; I/O interfacing. May be taken for graduate credit. Prerequisites: ECE 3135; corequisite: ECE 3525. (Spring).

ECE 3520. Microprocessors: Software, Hardware, and Interfacing. 3 Credits.

Microprocessor architecture, assembly language, address decoding, hardware interrupt, parallel and serial interfacing with various circuits, timer/counters, direct memory access, microprocessor-based system. Hands-on laboratory experience is an integral part of this course. Prerequisite: ECE 2140.

ECE 3525. Introduction to Embedded Systems. 3 Credits.

Microcontrollers and their application in embedded systems. Topics include assembly and C for microcontroller programming, serial and parallel I/O interfacing, and multimedia interfacing. Students perform laboratory experiments and a final project to develop a microcontroller-based embedded system. Prerequisite: CSCI 1121, ECE 3520.

ECE 3530. Introduction to Parallel and Distributed Computer Systems. 3 Credits.

Shared and distributed memory computer systems. Parallel computation. Interprocess communication and synchronization. Terminal, file transfer, and message handling protocols. Algorithms for deadlock detection, concurrency control, and synchronization in distributed systems. Network security and privacy. Resource control and management. Prerequisite: ECE 3515.

ECE 3820. Principles and Practice of Biomedical Engineering. 0-4 Credits.

Introduction to engineering principles applicable to medicine; medical measurements for clinical use and research; anatomy and physiology of the human body from system and cellular approaches. Principles of biomedical engineering are reinforced by determining and analyzing physiological measurements in laboratory exercises. Prerequisite: ECE 2110, APSC 2113.

ECE 3910. Capstone Design Preparation. 1 Credit.

Elements of project design; formulation of project ideas. (Fall).

ECE 3915. Electrical, Computer, and Biomedical Engineering Capstone Project Lab I. 1 Credit.

ECE 3915, ECE 4920, and ECE 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. (Spring).

ECE 3915W. Electrical, Computer, and Biomedical Engineering Capstone Project Lab I. 1 Credit.

ECE 3915, ECE 4920, and ECE 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project.

ECE 4140. VLSI Design and Simulation. 3 Credits.

Design of VLSI circuits. PMOS and NMOS transistors, switch and gate logic, design rules, CAD system, speed and power considerations, scaling of transistors to the nano-scale, designing with highly variable process parameters. The student will design a VLSI chip and simulate the design. May be taken for graduate credit. Prerequisite: ECE 3130, ECE 3135.

ECE 4145. Micro & Nano Fabrication Tech. 3 Credits.

Modern process technologies associated with various types of processing. Silicon fabrication process, micro- and nanofabrications. Limitation at nano-scale, and other available technologies. Alternatives approach. May be taken for graduate credit.

ECE 4150. ASIC Design and Testing of VLSI Circuits. 3 Credits.

ASIC and mixed-signal design methodology, use of ASIC design CAD tools. Logic synthesis, styles of synthesis, power/area/speed constraints. VLSI testing, fault models, design for testability techniques, scan path, built-in self-test. Testing of chips designed in ECE 4140 and of nano-scale circuits. May be taken for graduate credit. Prerequisite: ECE 4140.

ECE 4155. Modern Measurements and Sensors. 3 Credits.

Measurement of dc, ac, and high-frequency signals. Interface electronic circuits. Sensors for measurement of mechanical, optical, magnetic, electromagnetic, thermal, chemical, and biochemical signals. Prerequisite: ECE 4320, ECE 3125, ECE 2140. May be taken for graduate credit.

ECE 4160. Introduction to Nano-electronics. 3 Credits.

Technology development beyond CMOS; trends in nano-fabrication and nano-metrology. Current flow in 1-D, 2-D, and 3-D electronic structures and their energy levels. Nano-structures such as nano-wire (Silicon or other material), Carbon Nano Tube (CNT), and Graphene. Nano-scale transistors. May be taken for graduate credit. Prerequisites: ECE 2115. (Fall).

ECE 4320. Fields and Waves II. 3 Credits.

Magneto-stationary fields, Lorentz force torques, Biot-Savart law, Ampere's law, magnetic materials, inductance, energy. Maxwell's equations, Faraday's law, charge-current continuity, vector potential. Time-harmonic fields, plane waves, polarization, skin effect, dielectric boundaries, and fiber optics. Radiation, dipole, gain, effective area. Prerequisite: APSC 2114, ECE 3315.

ECE 4325. Microwave and Optics Laboratory. 1 Credit.

Experiments in transmission lines, network analyzer measurements of scattering parameters, microwave systems, fiber-optic systems and antennas. Introduction to the characteristics of laser and optical systems. Prerequisite: ECE 4320.

ECE 4435. Fiber Optical Communications. 3 Credits.

Lightwave fundamentals. Integrated optics. Optical fiber waveguides. Light sources and detectors. Distribution networks and fiber components. Modulation. Noise and detection. System design. Prerequisite: APSC 2114; ECE 3310 or ECE 4320.

ECE 4535. Computer Architecture and Design. 3 Credits.

Design of bus-based digital computer systems, memory subsystems, caches, and multiple processors. Comparison of RISC and CISC processors and standard buses. Bus transfer and control signals. Performance, memory management, architectural support for protection, task switching, exception handling, instruction pipelines. Prerequisite: ECE 3515.

ECE 4610. Electrical Energy Conversion. 3 Credits.

Three-phase and single-phase AC rotating machines and transformers, DC machines, rotating machines as circuit elements, power semiconductor converters. Renewable generation, utility grid integration, smart grid applications. May be taken for graduate credit by students in fields other than electrical engineering. Prerequisite: ECE 2210, ECE 3315.

ECE 4615. Electrical Power Laboratory. 1 Credit.

Experiments in support of the analysis and design of electrical power systems. Measurements of the characteristics of devices to generate electric power. Rectification and inversion processes for power systems and drives. Prerequisite or corequisite: ECE 4610.

ECE 4620. Electrical Power Systems. 3 Credits.

AC power grids, transmission line parameters, load flow, economic dispatch voltage, frequency and power flow control. Voltage, current and power limitations. Fault analysis and stability considerations. Effect of independent power producers and variable energy sources and energy storage. May be taken for graduate credit.

ECE 4710. Control Systems Design. 3 Credits.

Mathematical models of linear systems; steady-state and transient analyses; root locus and frequency response methods; synthesis of linear feedback control systems. Prerequisite: APSC 2114, ECE 2210 or MAE 3134.

ECE 4715. Control Systems Laboratory. 1 Credit.

Experiments in support of control theory, involving the use of the digital computer for process control in real time. Design of feedback and compensation with computer implementation. Digital simulation of linear and nonlinear systems. Prerequisite or corequisite: ECE 4710.

ECE 4730. Robotic Systems. 3 Credits.

Modeling and analysis of robot designs. Kinematics of mechanical linkages, structures, actuators, transmissions, and sensors. Design of robot control systems, computer programming, and vision systems. Use of artificial intelligence. Current industrial applications and limitations of robotic systems. Same as MAE 3197. Prerequisite: computer programming, APSC 2058, ECE 4710.

ECE 4735. Robotics Laboratory. 1 Credit.

Experiments illustrating basic principles and programming of robots and other automated machinery. Design and writing of computer programs to use a robot's arm, vision, and data files to accomplish tasks. Prerequisite or corequisite: ECE 4730/MAE 3197.

ECE 4820. Anatomy and Physiology for Engineers. 3 Credits.

Human anatomy and physiology from an engineering viewpoint. Analysis of functions of major physiological systems. Biopotentials, mechanics, gas exchange, chemical balance, electrical and chemical signaling, nervous control, voluntary and reflex factors.

ECE 4830. Introduction to Medical Imaging Methods. 3 Credits.

Common imaging modalities, including ultrasound, X-ray, MRI, CT, SPECT, and PET. Overview of linear systems, basic properties of an imaging system, the physics and instrumentation behind each modality, and their respective advantages, disadvantages, and applications. May be taken for graduate credit. Prerequisite: ECE 3220, ECE 3820.

ECE 4835. Introduction to Telemedicine. 3 Credits.

Clinical applications; data dimensionality, acquisition, and conversion; transmission methods (wired, wireless); networking; compression; measurement of quality and accuracy; reception and display considerations; data archiving and retrieval; economic issues; user-interface considerations. Prerequisite: ECE 3220; corequisite: APSC 3115.

ECE 4920. Electrical, Computer, and Biomedical Engineering Capstone Project Lab II. 3 Credits.

ECE 3915, ECE 4920, and ECE 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. (Fall).

ECE 4920W. Electrical, Computer, and Biomedical Engineering Capstone Project Lab II. 3 Credits.

ECE 3915, ECE 4920, and ECE 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project.

ECE 4925. Electrical, Computer, and Biomedical Engineering Capstone Project Lab III. 2 Credits.

ECE 3915, ECE 4920, and ECE 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. (Spring).

ECE 4925W. Electrical, Computer, and Biomedical Engineering Capstone Project Lab III. 2 Credits.

ECE 3915, ECE 4920, and ECE 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project.

ECE 4980. Special Topics. 1-3 Credits.

Topic to be announced in the Schedule of Classes. (Fall and spring).

ECE 4990. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

ECE 6005. Microcomputer Systems Architecture. 3 Credits.

Advanced microprocessor-based systems CISC and RISC. Buses, timing, and system interface protocols. Advanced memory designs. Multilevel cache designs. Architectural support for memory management, protection, task switching, and exception handling. Multiprocessor systems. Prerequisite: ECE 3515.

ECE 6010. Linear Systems Theory. 3 Credits.

Introduction to linear systems theory. Topics include linear vector spaces and linear operators, mathematical representation of dynamic linear systems, concept of state and solution of the state equation, controllability and observability, canonical forms of the state equation, state feedback, and state estimation. Prerequisite: ECE 2210.

ECE 6015. Stochastic Processes in Engineering. 3 Credits.

Basic concepts of modeling of random phenomena in electrical and computer systems: probability framework, stationarity, linear filtering. Optimization of discrete and continuous stochastic processes. Elements of performance analysis. Prerequisite: ECE 2210, APSC 3115.

ECE 6020. Applied Electromagnetics. 3 Credits.

Review of Maxwell's equations; electromagnetics of circuits, plane wave propagation; transmission lines; waveguides; radiating systems; receiving antennas and pattern reciprocity, array antennas; electromagnetic properties of materials: conductors, crystals, devices; optical transmission. Prerequisite: ECE 4320.

ECE 6025. Signals and Transforms in Engineering. 3 Credits.

Representation of discrete and analog signals as sums of canonical elementary functions; normal equations and the LMS approximation theory, singular value decomposition for discrete and continuous signals; application of classical transform theory to the study of linear systems. Prerequisite: ECE 2210; APSC 2114.

ECE 6030. Device Electronics. 3 Credits.

Semiconductor device concepts; doping, drift diffusion, recombination. Analysis of Schottky and Ohmic contacts, pn junctions, MOS systems. Modeling and analysis of semiconductor devices such as MOSFET and bipolar transistors. Hot electron and short and narrow channel effects. Prerequisite: ECE 6221.

ECE 6035. Introduction to Computer Networks. 3 Credits.

Layered protocol architectures. Digital transmission, fundamental limits. Error detection and ARQ protocols. Data link layer and control. Multiple access protocols. Circuit and packet switching. Multiplexing. Routing. Flow and congestion control, queue management. LAN standards. TCP/IP. Next-generation Internet. May not be taken for credit by students who have taken ECE 3415. Prerequisite: APSC 3115.

ECE 6045. Special Topics. 1-3 Credits.

Topics to be announced in the Schedule of Classes. (Fall and spring).

ECE 6050. Research. 1-12 Credits.

Applied research and experimentation projects, as arranged. May be repeated for credit.

ECE 6060. Electric Power Generation. 3 Credits.

Overview of primary traditional and alternative energy sources and storage. Analysis of machinery employed in energy conversion processes. Effect of independent power producers on long-term and short-term stability of large grids. Prerequisite: ECE 4620 or permission of course director.

ECE 6065. Colloquium. 0 Credits.

Lectures by outstanding authorities in electrical and computer engineering. Topics to be announced each semester. (Fall and spring).

ECE 6105. Introduction to High-Performance Computing. 3 Credits.

Taxonomy and classifications of computers and parallel computers. Parallel thinking and parallel algorithms. Domain decomposition and load balancing. Programming parallel computers using the message passing, global address space, and partitioned global address space paradigms. Prerequisite: graduate standing in science or engineering or consent of instructor.

ECE 6120. High-Performance Processors. 3 Credits.

Processor microarchitecture and instruction-level parallelism. Superpipelines and superscalar processors. Multiple-instruction fetching, aligning, merging, and issuing. Hardware and software solutions to structural and data and control hazards. Branch prediction and static and dynamic speculation. Register renaming, Tomasulo's algorithm. VLIWs. Prerequisite: ECE 6005.

ECE 6125. Parallel Computer Architecture. 3 Credits.

Architectural classifications and taxonomies of parallel computers; enabling technologies, including advanced processor concepts, interconnection networks, high-speed memory architectures and protocols; parallel performance and scalability; and introduction to parallel algorithms and parallel programming. Prerequisite: ECE 6005 or ECE 6105.

ECE 6130. Grid and Cloud Computing. 3 Credits.

Introduction to grid, cloud, and distributed computing. Large-scale computing and storage systems. Network protocols, quality-of-service and security issues. Hardware infrastructure and middleware. Distributed algorithms, programming tools, operating and file systems. Prerequisite: ECE 6105.

ECE 6140. Embedded Systems. 3 Credits.

Architectural advances and instruction sets for embedded microprocessors. Real-time operating systems and real-time scheduling, use of pre-designed software and hardware cores. Sensors, actuators, and data acquisition. System-on-chip (SoC). Design case studies. Prerequisite: ECE 6005.

ECE 6213. Design of Vlsi Circuits. 3 Credits.

Top-down ASIC-FPGA design methodology. Modeling of VLSI circuits using HDL. Behavioral, structural, and RTL modeling techniques; validation and verification techniques. Introduction to logic synthesis. Intellectual property usage. Students design and simulate a project using state-of-the-art commercial VLSI CAD tools. Prerequisite: ECE 4140.

ECE 6214. High-Level VLSI Design Methodology. 3 Credits.

High-level ASIC-FPGA design methodology. RTL modeling of VLSI circuits, using HDL for synthesis. Detailed discussion of logic synthesis. Architectural tradeoff for large VLSI circuits. Advanced optimization techniques. VLSI design flow, using the state-of-the-art, front-end design entry and simulation tools and back-end logic synthesis. Prerequisite: ECE 6213.

ECE 6215. Introduction to MEMS. 3 Credits.

MicroElectroMechanical Systems. Micro/nano fabrication techniques, bulk micromachining, surface micromachining. Examples of mechanical sensors and actuators, examples of microsystems, interface circuits and MEMS applications. Use of the CAD tools to design MEMS devices. May be taken by undergraduates. Prerequisite: ECE 4140.

ECE 6216. RF/VLSI Circuit Design. 3 Credits.

Introduction to radio frequency systems: RF design, noise, amplifiers, specifications, matching concepts, mixers, oscillators, system-level design. Prerequisite: ECE 4140.

ECE 6218. Advanced Analog VLSI Circuit Design. 3 Credits.

MOS technology: building blocks, devices, capacitors, limitations. Operational amplifiers and other analog systems. Layout examples and design principles. Mixed-signal A/D and D/A. Students use the CAD VLSI laboratory to design and simulate circuits. Prerequisite: ECE 4140.

ECE 6221. Introduction to Physical Electronics. 3 Credits.

Theoretical principles underlying the operation of electronic devices. Postulates of quantum mechanics: wave-particle duality, uncertainty relations, electronic band structure. Free-carrier statistics; electron-photon interaction. Physical principles of semiconductor and optoelectronic devices. Prerequisite: ECE 4320.

ECE 6482. Medical Measurements. 3 Credits.

Theory of measurements in biological areas, techniques for electronic measurements on biological specimens. Experiments in acquisition, processing, and measurement of physiological signals, ECG, EEG, and EMG. Corequisite: ECE 6040.

ECE 6483. Medical Instrumentation Design. 3 Credits.

Modern biomedical measurement techniques and instrumentation, including theory of data acquisition, biopotentials, biomedical signal processing, clinical laboratory instrumentation, respiratory system measurements, medical imaging, and prosthetic devices. Prerequisite: ECE 6482.

ECE 6484. Biomedical Signal Analysis. 3 Credits.

Origin, acquisition, and analysis of physiological signals. Deterministic and probabilistic modeling; fitting models; sequences and time series. Feature extraction from EEG and ECG; Fourier analysis and filtering; modeling. Noise and artifact removal and signal compensation. Prerequisite: ECE 6482.

ECE 6485. Medical Imaging I. 3 Credits.

Principles of projection radiography, fluoroscopy, tomography, ultrasound and nuclear sources; biomagnetic imaging. Source and object; recorder resolution and noise; scatter and attenuation. Ultrasound techniques and instrumentation, including physics of ultrasound, transducers, ultrasound imaging, hemodynamics, Doppler techniques. Prerequisites: ECE 2110, ECE 6482. (Fall).

ECE 6486. Clinical Medicine for Engineers. 3 Credits.

Overview of clinical medicine with emphasis on those areas most affected by engineering and technology. Prerequisite: ECE 6482.

ECE 6487. Rehabilitation Medicine Engineering. 3 Credits.

Cross-sectional view of those areas of medicine most involved with the treatment of handicapped individuals. Application of engineering theory and techniques to the rehabilitation of handicapped individuals. Major problem areas and general solutions, solutions to some specific problems. Prerequisite: ECE 6482.

ECE 6500. Information Theory. 3 Credits.

The concepts of source and channel. Measure of information, entropy, mutual information. The noiseless coding theorem. The noisy coding theorem. Channel capacity: symmetric and nonsymmetric channels, Gaussian and binary symmetric channels. Rate-distortion theory. Basics of multiple-user information theory. Prerequisite: ECE 6015.

ECE 6505. Error Control Coding. 3 Credits.

Algebraic coding theory: finite fields, linear block codes, cyclic and Reed-Solomon codes. Error detection using CRC codes. Convolutional codes and trellis-coded modulations: structure, properties, performance bounds. Capacity achieving codes; soft-input-soft-output decoding; computationally efficient decoding algorithms. Prerequisite: ECE 6015.

ECE 6510. Communication Theory I. 3 Credits.

Principles of digital communications. Channels, digital modulation; optimum receivers and algorithms in the AWGN; coherent, non-coherent, and fading channels. Correlation detectors, matched filters; diversity. Bounds on performance of communications, comparison of communications systems and implementation issues. Prerequisite: ECE 6015.

ECE 6520. Mobile & Wireless Comm Systems. 3 Credits.

Mobile channel characterization. Modulation and coding techniques. Code division multiple access. Fading countermeasures; coding, equalization, and multiple transmit/receive antennas. Power control. Capacity of cellular and ad hoc networks. Structure and evolution of mobile communications networks. Evolving technologies and standards. Prerequisite: ECE 6510.

ECE 6525. Satellite Communication Systems. 3 Credits.

Low earth orbit and geostationary satellite systems. Transmission systems. RF link budgets. Modulation and multiplexing. Multiple access techniques: FDMA, TDMA, CDMA. Satellite transponders, antennas, and earth stations. Prerequisite: ECE 6510.

ECE 6530. Electronic Warfare. 3 Credits.

Electronic attack and protection of information. Countermeasures and counter-countermeasures. Electronic attacks on ranging and tracking radar systems, jamming and jamming defense. Electronic attack on communications systems. Defensive techniques, signal design, spread spectrum. Attack and defense of optical and high-energy systems. Prerequisite: ECE 6510.

ECE 6535. Code-Division Multiple Access. 3 Credits.

Spread-spectrum transmission; direct sequence and frequency hopping. Conventional code division multiple access. Multi-user detection and capacity limits for multi-user communications. High-capacity multi-user communications. Applications to mobile communications and cellular networks, 1xEVDO, cdma2000. Prerequisites: ECE 6510. (Spring, odd years).

ECE 6545. Information Transmission Systems. 3 Credits.

Transmission media, signals, channels, noise. A/D conversion, data compression, information exchange codes. Carrier modulation, modems and standards. Baseband transmission and codes, synchronization and timing. Multiplexing. Inverse multiplexing. Transmission impairments, error control procedures. Prerequisite: ECE 3410.

ECE 6550. Advanced Network Architectures. 3 Credits.

Review of packet and circuit switching. Introduction to the Internet architecture. High-speed, wide-area networks: Frame Relay, ATM. High-speed switched LANs: Gigabit Ethernet. Switching architectures. Blocking and nonblocking switches. Quality-of-service and traffic engineering, MPLS. Overview of wireless and optical networks. Prerequisite: ECE 3415 or ECE 6035.

ECE 6555. Networks Protocols. 3 Credits.

Layering, OSI, and Internet architectures. Link-layer protocols: PPP, HDLC, SONET. Cell-switching, ATM, and adaptation protocols. MAC layer protocols: Ethernet, 802.11. IP addressing, routing protocols: RIP, OSPF. Multi-domain routing: CIDR, BGP. End-to-end protocols: UDP, TCP. TCP congestion control. Application layer protocols: DNS, HTTP, SMTP, FTP. Prerequisite: ECE 3415 or ECE 6035.

ECE 6560. Network Performance Analysis. 3 Credits.

Telecommunications traffic models: arrival and service time distributions, Poisson and Erlang formulas. Topological design algorithms. Delay and blocking models and probabilities for packet switched networks. Routing, relaying, and flow control algorithms: delay and cost minimization, throughput optimization. Prerequisite: ECE 6015 and any of ECE 6035, ECE 6545, or ECE 6555.

ECE 6565. Telecommunications Security. 3 Credits.

Speech and data scrambling. Linear and nonlinear transformations. Cryptographic techniques. Block and stream ciphers. The Data Encryption Standard (DES). Key management, digital signatures, message authentication, hash functions. Public key algorithms. Prerequisite: graduate standing in science or engineering or consent of instructor.

ECE 6570. Telecommunications Security Protocols. 3 Credits.

The OSI security architecture: services and mechanisms, risk analysis. Internet protocol mechanisms. Ipv4 and Ipv6 security, security associations, authentication, MD5. Encapsulating security payload. E-mail security: PGP, S/MIME, PEM, MSP. Secure voice communications algorithms. Security in Internet commerce: SSL, SET. Prerequisite: ECE 6565, ECE 6555.

ECE 6575. Optical Communication Networks. 3 Credits.

Wave propagation through fiber, dispersion, polarization. Multiplexing techniques, WDM. Optical networking components. Optical transmission systems design. All-optical networking, broadcast star and wavelength routing networks. Performance analysis, survivability, control and management. Optical access networks. Prerequisite: APSC 3115.

ECE 6580. Wireless Networks. 3 Credits.

Wireless channels and transmission fundamentals. Wide area networks: CDMA (UMTS/cdma2000) and OFDMA-based networks. Physical, MAC, and link layer protocols for wireless networks. Satellite systems. Broadcast systems. Wireless LANs, sensor and ad-hoc networks. Mobility support: handoffs and Mobile IP. Prerequisite: ECE 3415.

ECE 6662. Power Electronics. 3 Credits.

Power semiconductors and applications to power supply, frequency control, uninterruptibility, and the design of HVDC power transmission. Multiphase power electronic circuits for AC and DC machines and industrial processes. Role of power electronics for renewable energy sources interconnected to distribution grids. Prerequisite: ECE 4625.

ECE 6666. Power System Transmission, Control, and Security. 3 Credits.

Analysis of AC networks, load flow, economic dispatch, voltage and frequency control. N-1 contingency and its role in assessing and maintaining system integrity. Analysis of loss of critical generating units and transmission capabilities under severe threats. Rapid restoration techniques based on historical data and heuristic approaches. Prerequisite: ECE 4620 or permission of course director.

ECE 6667. Nuclear Power Generation. 3 Credits.

Review of Nuclear Reactor Engineering, traditional and developing reactor design, issues regarding the safe operation of nuclear plant, control and regulatory aspects of nuclear power generation. Prerequisites: ECE 4620 or permission of course director. (Fall, even years).

ECE 6668. Power Distribution Grids. 3 Credits.

Equipment for power distribution for industrial, commercial, and residential applications. Switching and safety at the distribution voltage level. Bulk insulation level and insulation coordination principles. Smart grid innovations. Remote metering. Prerequisites: ECE 4620 or permission of course director. (Fall, odd years).

ECE 6669. Developing Trends in Electrical Power Networks. 3 Credits.

Planning and operating efficient electric utility power systems. Economics, finance, and regulation; industrial power economics; load demand and management. Reliability of the generation system, capacity and transmission planning. Prerequisites: ECE 4620 or permission of course director. (Spring, odd years).

ECE 6670. Power System Protection. 3 Credits.

Main philosophy for protection of power systems. Protection systems and approaches. Reliability and Security of Protection Systems. Protection of Generators, Transformers, Motors and Transmission Lines. Requirements for Distributed Source Generation (DSG's). Requirements for system protection, to prevent grid blackouts and to enhance power system security. Prerequisites: ECE 4620 or permission of course director. (Spring, even years).

ECE 6690. Power Systems Economics. 3 Credits.

Overview of electrical power market economics and market participants. Production pricing and market clearing pricing. Market ancillary service pricing. Location marginal pricing and zonal pricing schemes. New electrical generation entrant impact. Investing in generation and in transmission. Independent power producers and independent transmission owners. Prerequisites: ECE 6060 or permission of course director. (Fall).

ECE 6691. Power Systems Reliability. 3 Credits.

Overview of probability theory and basic power market reliability modeling and evaluation. Generation supply reliability techniques. Reliability of transmission system and delivery of supply. Loss of load probability evaluation. Forced and maintenance outages. Load forecasting and probability of interconnected systems. Risk evaluation and operating reserves. Prerequisites: ECE 4620 or permission of course director. (Spring, even years).

ECE 6699. Energy and Sustainability. 3 Credits.

Energy sources, consumption, and the societal and environmental impacts. Energy generation and harvesting technology. Thermodynamics and efficiency limits. Nanotechnology for sustainability. Emission and pollution. Growth models; learning curves. Life-cycle analysis. Energy in an international perspective: origins, crises, and solutions. Recommended background: Basic understanding of energy and thermodynamics, such as ECE 4620, MAE 2131, or with permission from the course director. (Fall, even years).

ECE 6705. Introduction to Microwave Engineering I. 3 Credits.

Transmission lines, scattering parameters, microwave networks, resonators. Modes in uniform waveguides, general characteristics of waveguide junctions. Transfer representations, filters, couplers, symmetrical waveguide junctions. Prerequisite: ECE 6020.

ECE 6710. Introduction to Microwave Engineering II. 3 Credits.

Active microwave components, amplifiers, oscillators, and mixers. Design of microwave amplifiers and oscillators, microwave transmitters and receivers. Introduction to microwave systems: radar, wireless communication systems, and radiometer systems. Prerequisite: ECE 6705.

ECE 6715. Antennas. 3 Credits.

Antenna circuits, radiation pattern, reciprocity, gain, receiving cross-section, scattering by antennas, mutual coupling, arrays. Polarization. Radiation from current distributions, equivalent aperture currents, dipoles, patch antennas, large phased arrays. Prerequisite: ECE 6020.

ECE 6720. Remote Sensing. 3 Credits.

Active and passive remote-sensing systems: scatterometers, real-aperture imaging, and synthetic-aperture radars. Sensing of surface, subsurface, and atmospheric parameters at microwave, infrared, and optical frequencies. Analysis of radiometric techniques using radiative transport theory, inverse scattering methods, profile inversion. Prerequisite: ECE 6020.

ECE 6725. Electromagnetic Radiation and Scattering. 3 Credits.

Alternative representations of solutions to Maxwell equations, Fourier transforms and spherical mode representations, field equivalence principles, dyadic Green's functions, radiation and scattering by simple shapes, geometrical theory of diffraction, integral equations and the moment method. Prerequisite: ECE 6020, ECE 6025.

ECE 6730. Waves in Random Media. 3 Credits.

Propagation and scattering of electromagnetic, optical, and acoustic waves in random media, scattering from rough surfaces and randomly distributed particles, turbulence. Applications to propagation through rain and fog. Laser beam scintillations, remote sensing, and communications channel modeling. Monte Carlo simulation. Prerequisite: ECE 6015, ECE 6725.

ECE 6735. Numerical Electromagnetics. 3 Credits.

Numerical methods for the solution of electromagnetic scattering and radiation problems. Major techniques: method of moments, T-matrix and finite element methods, geometrical theory of diffraction and hybrid approaches to solve scattering and radiation by wire structures, surfaces, and composite bodies. Prerequisite: ECE 6020, ECE 6025, ECE 6800.

ECE 6740. Nanomagnetism. 3 Credits.

Physics of magnetism in solids, with emphasis on magnetic phenomena used in devices. Fundamental properties of magnetic materials. The origins of magnetism, demagnetizing fields, anisotropy, magnetostriction, domains and coercivity. Prerequisite: ECE 6020.

ECE 6745. Analysis of Nonlinear and Multivalued Devices. 3 Credits.

Numerical techniques for modeling semiconductor and magnetic devices. Modeling multivalued behavior of memory materials. Optimization of geometry. Prerequisite: ECE 6020.

ECE 6750. Introduction to Radar Systems. 3 Credits.

The radar range equation. Radar cross section of targets, target detection and parameter estimation, detection in clutter. Resolution, ambiguities, and signal design. Moving-target indicators. Pulse Doppler radar. Radar antennas, phased arrays. Synthetic aperture and space-based radar. Prerequisite: ECE 4320, ECE 6015.

ECE 6755. Space/Time Adaptive Processing for Radar. 3 Credits.

Introduction to beam forming and space/time adaptive processing: spatial filtering; conventional and adaptive beam forming; space/time signal environments, metrics, computational issues, and advanced algorithms and analysis. Prerequisite: ECE 6750.

ECE 6760. Propagation Modeling in Wireless Communications. 3 Credits.

Wireless communication channel modeling, propagation mechanisms, terrestrial fixed links, satellite fixed links, macrocells, fading models, micro-cells, picocells, diversity, equalizers. Prerequisite: ECE 6020 or permission of instructor.

ECE 6765. Fiber and Integrated Optics. 3 Credits.

Propagation of light in optical fibers and planar waveguides, absorption and material dispersion effects, polarization, birefringence, spatial and temporal coherence. Components in fiber optic networks: directional couplers, power splitters, tunable filters and diffraction gratings. Prerequisite: ECE 6020.

ECE 6770. Applied Magnetism. 3 Credits.

Classification of magnetic materials. Magnetic measurements. Soft and hard magnetic materials. Applications to microwave, magnetic recording, permanent magnets, magneto-optics, magnetostrictive devices. Magnetic sensors. Electric power. Superconducting devices. Prerequisite: ECE 6020.

ECE 6800. Computational Techniques in Electrical Engineering. 3 Credits.

Introduction to linear algebra and vector spaces as applied to networks and electrical systems. Orthogonal bases, projections, and least squares. Fast Fourier transforms. Eigenvalues and eigenvectors with applications. Computations with matrices. Constrained optimization in electrical systems. Network models and applications. Prerequisite: ECE 2210, APSC 2114.

ECE 6805. Neural Networks and Applications. 3 Credits.

Theory of neural network models, relation to biological models. Examples of known models. Possible applications of neural networks. Computational intelligent systems, digital vs. analog approaches. Building blocks. Examples on realized neural networks. (Spring, even years).

ECE 6810. Speech and Audio Processing by Computer. 3 Credits.

Acoustic sensor technologies and characteristics. Speech coding: waveform coding, voice source coding. Speech enhancement and noise reduction. Speech analysis and synthesis, audio formats and compression standards. Speech recognition: isolated word recognition, continuous speech recognition, language identification. Models for speech and audio. Prerequisite: graduate standing.

ECE 6815. Microarchitect/Multimedia Proc. 3 Credits.

Introduction to multimedia. Multimedia formats, conversion, and combinations. Delivery and trends. Servers and networks. Hardware and architecture. End-user devices. Digital libraries, video conferencing and collaboration. Educational and health applications. Case studies and trials. Prerequisite: ECE 6005.

ECE 6820. DSP Embedded Systems. 3 Credits.

Digital signals, binary number representation, fixed-point and floating-point DSP architectures. Q-format for data representation, bit allocation and arithmetic. Portability of arithmetic expressions: floating point vs. fixed point. Applications to signal parameter estimation, signal generation, filtering, signal correlation, spectral estimation (FFT). Prerequisite: ECE 6005.

ECE 6825. Computer Control Systems. 3 Credits.

Analysis of automatic control systems in which the control procedure uses on-line digital computation. Topics include single- and multirate sampling, z-transforms, responses of discrete systems, stability criteria, and discrete control design. Prerequisite or concurrent registration: ECE 6010.

ECE 6830. System Optimization. 3 Credits.

Parameter optimization problems, theory of minima and maxima. Optimization problems for dynamic systems, calculus of variations, the maximum principle and the Hamilton-Jacobi equation. Optimization problems with constraints, optimal feedback systems. Numerical solution of optimal problems. Prerequisite: ECE 6010.

ECE 6835. Nonlinear Systems. 3 Credits.

Definition of linear and nonlinear systems; introduction to approximate analysis of nonlinear systems—describing functions, Krylov and Bogoliubov asymptotical method, and Tsytkin locus. Forced oscillations—jump resonance. Stability analysis—Liapunov criterion. Lur  problem and Popov method. Prerequisite: ECE 6010.

ECE 6840. Digital Image Processing. 3 Credits.

Properties of images and visual systems. Image acquisition, sampling, quantization. One- and two-dimensional image transform techniques; enhancement and restoration. Image coding and data compression. Segmentation, representation, boundary and shape, texture, matching. Image understanding. Prerequisite: ECE 6800.

ECE 6842. Image Engineering. 3 Credits.

Sensor/camera design and analysis as a system. Detection and noise processes underlying the sensing of optical radiation; the engineering and physics of image formation. Topics covered include radiometry/photometry, optics and image formation, device and camera characterization, and image quality metrics and system design trades. Prerequisites: ECE 6010, ECE 6015. (Fall, even years).

ECE 6845. Image Synthesis. 3 Credits.

Image synthesis techniques, mathematical image models, image reconstruction techniques, color texture synthesis, synthesis of three-dimensional scenes. Prerequisite: ECE 6015.

ECE 6850. Pattern Recognition. 3 Credits.

Random vectors, transformations. Hypothesis testing, error probability, sequential methods. Bayes, other linear classifiers. Discriminant functions, parameter estimation, learning, and dimensionality reduction. Nonparametric methods; clustering; feature selection and ordering. Computer applications and projects. Prerequisite: ECE 6015.

ECE 6855. Digital Signal Processing Techniques. 3 Credits.

Signal and system representation, sampling and quantization, transform techniques. Recursive and nonrecursive digital filter design, recursive estimation, linear predictive filtering. Fast algorithms for signal processing. Current topics. Prerequisite: ECE 3220 or ECE 6025, and ECE 6015.

ECE 6860. Compression Techniques for Data, Speech, and Video. 3 Credits.

Lossless and lossy coding theorems, rate distortion bound. Data compression algorithms: Huffman coding, run-length coding. Differential coding. Transform coding. Voice, audio, image and video coding techniques: CELP, JPEG, MPEG, MP3. Data coding standards: G.722, G.726, G.728, H.261, H.323. Prerequisite: ECE 6015, ECE 6025.

ECE 6865. Signal Detection & Estimation. 3 Credits.

Minimum variance unbiased estimation. Cramer-Rao bound, statistical modeling, sufficient statistics, maximum likelihood estimation, efficient estimators, least squares. Bayesian estimators. Wiener and Kalman filters, complex data and parameters. Applications to radar, speech, image, biomedicine, communications, control. Prerequisite: ECE 6010, ECE 6015, ECE 6025.

ECE 6875. Wavelets and Their Applications. 3 Credits.

Time-frequency analysis. Continuous, discrete, and discrete-time wavelet transform. Multirate filter banks. Multiband wavelets, two-dimensional wavelets. Wavelet packets and matching pursuit. Wavelets in noise filtering, compression, modeling of fractals, communications, detection, adaptive systems, neural networks, and fast computation. Prerequisite: ECE 6025, ECE 6855.

ECE 6880. Adaptive Signal Processing. 3 Credits.

Adaptation criteria. On-line adaptive filtering algorithms: least mean square and recursive least square. Adaptation in transform domain. Convergence of adaptive algorithms and tracking. Applications in system identification, adaptive channel equalization, interference cancellation and suppression, and adaptive antenna arrays. Blind deconvolution. Prerequisite: ECE 6865.

ECE 6885. Computer Vision. 3 Credits.

Image processing; edge detection, segmentation, local features, shape and region description in 2D and 3D. Insights from human vision studies. Representation for vision: object models, synthetic images, matching, gaps, algorithms. Interference, production system, syntactic networks. Planning spatial reasoning for robot vision. Prerequisite: CSCI 6511; ECE 6850.

ECE 6998. Thesis Research. 3 Credits.**ECE 6999. Thesis Research. 3 Credits.****ECE 8150. Advanced Topics in Computer Architecture. 3 Credits.**

Examples of topics are interconnection networks, fault tolerance, load balancing, workload characterization, and performance modeling of advanced computer systems. Prerequisite: ECE 6120, ECE 6125.

ECE 8483. Bioelectric Phenomena and Bioelectromagnetics. 3 Credits.

Mathematical treatment of bioelectric phenomena: membrane, dynamics, potentials, and subthreshold effects; solid-state phenomena; nerve propagation. Electromagnetic interactions with biological systems; energy absorption and heat production; diagnostic and therapeutic applications of electromagnetic energy. Prerequisite: ECE 6020, ECE 6483.

ECE 8484. Medical Imaging II. 3 Credits.

Reconstruction algorithms and implementations for CT and MRI; PET and SPECT. Medical image analysis: enhancement, segmentation, computer-aided detection and diagnosis. Prerequisite: ECE 6484, ECE 6485.

ECE 8485. Special Topics in Medical Engineering. 3 Credits.

Exploration of a current advanced topic in biomedical engineering. Topic to be announced in the Schedule of Classes. (Fall and spring).

ECE 8705. High Resolution Antenna Arrays. 3 Credits.

Review of antenna theory; radiation and reception by array antennas; antenna arrays as multiport receivers. Angle-of-arrival estimation using MUSIC and related techniques. Application to communications and radar. Prerequisite: ECE 6015, ECE 6715.

ECE 8710. Electromagnetic Wave Propagation. 3 Credits.

Electromagnetic wave propagation in complex environments, with applications to communications and radar; terrestrial propagation models, satellite-to-ground propagation, effects of the atmosphere and the ionosphere, statistical and numerical models. Prerequisite: ECE 6015, ECE 6020.

ECE 8999. Dissertation Research. 0-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

ELLIOTT SCHOOL OF INTERNATIONAL AFFAIRS (ESIA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ESIA 0920. Continuing Research - Masters. 1 Credit.

EMERGENCY HEALTH SERVICES (EHS)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EHS 1002. CPR & First Aid. 1 Credit.

Development of the proper techniques of cardiopulmonary resuscitation and first aid. Nationally recognized certification provided.

EHS 1040. Emergency Medical Tech-Basic. 3 Credits.

EMT-Basic knowledge and skills. Includes basic life support, patient assessment, bleeding control, bandaging and splinting. Successful completion makes student eligible to sit for National Registry certification exam.

EHS 1041. EMT - Basic Lab. 1 Credit.

Application and practice of EMT-Basic skills.

EHS 1044. EMT-Basic Recertification. 3 Credits.

Prepares students to recertify as a National Registry EMT-Basic. Includes an "EMT Refresher" class and continuing education program. Laboratory fee.

EHS 1058. EMT Instructor Development. 2 Credits.

Students develop and deliver didactic and skill instruction. Students participate in the day-to-day teaching and management in an EMT-Basic program.

EHS 2104. Legal Aspects/Emergency Mgmt. 3 Credits.

Legal issues in the delivery of emergency medical services, including abandonment, malpractice, negligence, patient consent, the Freedom of Information and Privacy Acts, the Good Samaritan law, protocol deviation, record keeping, patient refusal of services, and medical control. Emergency medicine legislation and recent court decisions. Prerequisite: HSci 2103.

EHS 2107. Theory&Prac of Rsch/ClinclSetng. 4 Credits.

Fundamentals of clinical research methods, design, and analysis related to emergency medicine.

EHS 2108. Emergency Med Clinical Scribe. 3 Credits.

Fundamentals of emergency medicine clinical practice through documentation and management of clinical information. Students participate as members of an emergency medicine team and explore topics related to emergency health care, e.g., practical human anatomy, medical terminology, diagnosis, patient care, medical records, and practice management.

EHS 2109. Emerg.Infections&Bioterrorism. 3 Credits.

Principles of the epidemiology of outbreaks, the rise of emerging infectious diseases, and strategies for emergency preparedness from a national and international perspective that includes biosecurity.

EHS 2110. EmergDeptCritCareAsses&Proced.. 4 Credits.

Expansion of EMT-Basic knowledge and skills for independent performance as a hospital technician; emphasis on the Emergency Department and Intensive Care Units.

EHS 2160. Disastr Respns Planng & Mgmt. 3 Credits.

Planning for and management of multiple-casualty incidents in the prehospital and hospital environment, including development of response plans, triage, medical evacuation procedures, communications, roles of government and the private sector, terrorism, and medical care for mass gatherings. Prerequisite: permission of program director.

EHS 2161. Medical Mgmt/Hasmat Incidents. 3 Credits.

Hazardous materials and their risks. Identification of hazardous materials and related problems, precautions in approaching the contaminated patient, protective clothing, decontamination, and management of selected hazards.

EHS 2162. Intro Princpls/Tactical Med. 4 Credits.

The basics of tactical emergency medicine, such as acute care in tactical combat situations and medical operations support of tactical teams.

EHS 2166. Current Topics. 1 Credit.

Review of the current literature to identify clinical, operational, educational, and administrative issues important in the leadership of EMS.

EHS 2174. Foundations of Emergency Health Services Systems. 3 Credits.

An overview of the design and operation of Emergency Health Services (EHS) systems, delivery of services, and the echelons of care. The history of Emergency Medical Services (EMS), the interface of public and private organizations and review of the various personnel who comprise these systems will be examined in relation to their impact on the health care delivery system.

EHS 2175. Community Risk Management and Safety in EHS. 3 Credits.

This course introduces the EHS professional to the benefits of community information and community relations. Students analyze strategies for introducing risk reduction programs and apply these concepts in the development of such programs.

EHS 2211. Intro to Telemedicine. 3 Credits.

An introduction to the ethical, legal, and technical aspects of telemedicine, including, but not limited to, emerging technologies, planning and operational considerations. Students will complete a number of practical exercises requiring direct application and utilization of Internet, video, audio, and other technologies.

EHS 4101. Humanitarian Relief Ops. 3 Credits.

An integrative approach to humanitarian relief operations, including factors that can influence relief delivery, field planning considerations, and the roles and limitations of non-governmental organizations, international organizations, local government, and various federal and civilian and military agencies. Emphasis on medical aspects of working with particular populations such as women, children, the elderly, and culturally underrepresented or persecuted population subsets.

EHS 4110. Operations Mgt in EHS Systems. 3 Credits.

This course applies principles of general management that contribute to the effectiveness of day to day operations within an Emergency Health Services Organization.

EHS 4111. Leadership Concepts in EHS. 3 Credits.

This course is designed to provide a basic introduction to leadership by focusing on what it means to be a good leader. Emphasis in the course is on the practice of leadership in the Emergency Health Services setting. The course will examine topics such as: the nature of leadership, recognizing leadership traits, developing leadership skills, creating a vision, setting the tone, listening to out-group members, handling conflict, overcoming obstacles, and addressing ethics in leadership. The course provides a special focus on facilitating students' understanding of their own leadership vision.

EHS 4112. Special Ops and Disaster Mgt. 3 Credits.

This course is an introduction to Emergency Health Services (EHS) Special Operations. The student will develop and apply a general understanding of what constitutes special operations and resources needed to mitigate special operations incidents, both small and large, in the 21st century. The student will be able to evaluate local special operations incidents, major multi-agency operations, scheduled and unscheduled mass casualty events, terrorism and natural disaster.

EHS 4144. Seminar in EHS Leadership. 3 Credits.

A senior capstone course, integrating the theories and concepts covered in previous work, with a focus on the identification and resolution of problems and opportunities encountered by the health sciences manager. To be taken in the final semester of study or with the program director approval.

EHS 4197. Clinical Internship. 1-6 Credits.**EHS 4198. Administrative Internship. 1-12 Credits.****EHS 4199. Independent Study. 1-3 Credits.****EHS 6201. Response /High Impact Emergenc. 3 Credits.**

Strategies for an effective response to large-scale and high-impact emergencies examined as the managerial foundation for development of a response policy.

EHS 6202. Analysis of Emergency Svc Syst. 3 Credits.

Analysis of policy, managerial strategy, and organizational structure of emergency service systems. Operational response enhancement/sustainment, intra- and interagency interaction, emergency response coordination across jurisdictional boundaries.

EHS 6203. Legal&RegltryOblig/Emer Svcs. 3 Credits.

Laws, regulations, and standards pertaining to emergency services. Implications for organizational policy and response requirements for executives, managers, and supervisors.

EHS 6204. Publ Info Mgt fr Emergency Svcs. 3 Credits.

Public information management for emergency services executives, managers, and supervisors.

EHS 6205. Strategic Emergency Response. 3 Credits.

Strategic analysis of counterterrorism response requirements for the emergency service organization. Determination of vulnerabilities and trends; development of operational doctrine.

EHS 6210. EMS Systems Design and Analysis. 3 Credits.

System design characteristics of high-performance EMS systems based on excellence in emergency care, response-time reliability, economic efficiency, and customer service from a strategic perspective. (Fall, spring, and summer).

EHS 6211. Innovations in Telemedicine. 3 Credits.

Consideration of telemedicine in a multidisciplinary format toward innovation and entrepreneurship in the fields of medicine, public health, engineering, and business.

EHS 6212. Teaching Strategies in the Health Professions. 3 Credits.

Teaching skills pertinent to the delivery of education in emergency medical services. Course design illustrates teaching and learning practices grounded in andragogy, contributing to curriculum program objectives of enhancing teaching skills. (Same as HSCI 6212, OT 8212) (Fall, spring, and summer).

EHS 6213. Curriculum Development in the Health Professions. 3 Credits.

Curriculum development and assessment skills in the health professions. Variables that affect the manner in which individuals learn and interact within professions and organizations. (Same as HSCI 6213) (Fall, spring, and summer).

EHS 6227. Intro to Human Health in Space. 3 Credits.

Introduction of aerospace concepts in an interdisciplinary context for those interested in human spaceflight. Elements of physiology, medicine, law, policy, engineering, and history are incorporated.

EHS 6274. Health Economics and Finance. 3 Credits.

Issues of health care economics, financial management, and budgeting that relate to managerial decision making. Applied financial management, management control systems, budgeting, staffing, and cost accounting. (Same as CML 6274) (Fall, spring, and summer).

EHS 6275. Ldrshp&Change/EmergSvcsMgt. 3 Credits.

The concept of leadership within the context of health professions, health systems, and health policy.

ENGINEERING MANAGEMENT AND SYSTEMS ENGINEERING (EMSE)

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EMSE 1001. Introduction to Systems Analysis. 1 Credit.

A survey of several aspects of systems analysis, including methodologies such as linear programming, network models, probability, and queuing theory, with applications to resource allocation, decision making, and statistical analysis. Spreadsheet and laboratory exercises and projects.

EMSE 2705. Mathematics in Operations Research. 3 Credits.

Mathematical foundations of optimization theory; linear algebra, advanced calculus, convexity theory. Geometrical interpretations and use of software. Prerequisite: MATH 2233.

EMSE 2801. Fundamentals of Systems Engineering. 3 Credits.

General introduction to systems engineering processes applied to designing, building, and operating complex engineering systems. Case studies and methodologies used for government and industry projects.

EMSE 3701. Operations Research Methods. 3 Credits.

Deterministic and stochastic methods. Optimization algorithms: Simplex method, Branch and Bound, combinatorial algorithms, heuristic methods. Optimization theory: convexity, duality, sensitivity analysis. Stochastic optimization: marginal analysis, Markov chains, Markov decision processes. Prerequisite: APSC 3115 and EMSE 2705, or permission of instructor.

EMSE 3740. Systems Thinking and Policy Modeling I. 3 Credits.

Introduction to systems thinking and the system dynamics approach to policy analysis, with applications to business management and public policy. Causal-loop and stock and flow models of business growth, technology adoption, and marketing. Use of role-based games to explain key principles of systems. Use of simulation software to model problems and case studies.

EMSE 3760. Discrete Systems Simulation. 3 Credits.

Simulation of discrete stochastic models. Simulation languages. Random-number/random-variate generation. Statistical design and analysis of experiments, terminating/nonterminating simulations; comparison of system designs. Input distributions, variance reduction, validation of models. Prerequisite: APSC 3115; CSCI 1121, CSCI 1041, or CSCI 1111; or permission of instructor.

EMSE 3815. Requirements Analysis and Elicitation. 3 Credits.

The process of translating and decomposing systems engineering objectives into measurable and tractable requirements. How requirements analysis supports general processes and standards through elicitation methods, requirements decomposition, traceability matrices, and systems requirements specifications.

EMSE 3850. Quantitative Models in Systems Engineering. 3 Credits.

Quantitative modeling techniques and their application to decision making in systems engineering. Linear, integer, and nonlinear optimization models. Stochastic models: inventory control, queuing systems, and regression analysis. Elements of Monte Carlo and discrete event system simulation. Prerequisite: APSC 3115.

EMSE 3855. Critical Infrastructure Systems. 3 Credits.

A survey of major topics in engineered infrastructure systems, such as asset management, environmental impact analysis, input-output life cycle analysis and inoperability modeling, infrastructure risk and reliability analysis, resilience and resistance to natural hazards or service disruptions, and development of infrastructure sustainability metrics.

EMSE 3855W. Critical Infrastruct. Systems. 3 Credits.**EMSE 4190. Senior Project in Systems Engineering I. 3 Credits.**

First phase of a two-semester senior project experience in systems engineering that involves identifying real world problems and assessing applicable systems engineering methodologies. Topics vary, but often relate to DC-area problems in public infrastructure or the private sector, including transportation, energy, environment, healthcare, telecommunications. Activities may involve site visits to operations facilities, interviews with engineering managers and policy makers. By the end of fall semester students must complete 1) an systems engineering team project using the systems methods acquired in their prior coursework, 2) an individual research literature review which complements their assigned team project. This initial project experience will be the foundation for their final project in the spring semester of their senior year.

EMSE 4191. Senior Project in Systems Engineering II. 3 Credits.

Field experience in systems engineering on a team basis. Each small group confronts an actual problem and formulates a solution using systems engineering methods and models. Oral and written reports. Prerequisite or corequisite: EMSE 4710, EMSE 4765, EMSE 3760, EMSE 4755.

EMSE 4197. Special Topics. 1-3 Credits.

May be repeated for credit provided the topic differs.

EMSE 4198. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

EMSE 4410. Survey of Finance and Engineering Economics. 3 Credits.

Survey of material relevant to financial decision-making for engineering activity. Includes traditional engineering economy topics; fundamentals of accounting; and financial planning, budgeting, and estimating applicable to the management of technical organizations.

EMSE 4710. Applied Optimization Modeling. 3 Credits.

Analysis of linear, integer, and nonlinear optimization models of decision problems that arise in industry, business, and government. Modeling techniques and applications; use of optimization software to solve models. Prerequisite: EMSE 3850 or permission of instructor.

EMSE 4755. Quality Control and Acceptance Sampling. 3 Credits.

Statistical approaches to quality assurance. Single and multivariate control charts, acceptance sampling by attributes and variables, process capability and design of experiments. Prerequisite: APSC 3115 or permission of instructor.

EMSE 4765. Data Analysis for Engineers and Scientists. 3 Credits.

Design of experiments and data collection. Regression, correlation, and prediction. Multivariate analysis, data pooling, and data compression. Model validation. Prerequisite: APSC 3115.

EMSE 6001. The Management of Technical Organizations. 3 Credits.

The practice of management as applied within technical organizations. Includes history of the tradition and current effective practices, research findings, and case studies, with objectives of enhanced understanding of external and internal factors influencing organizational performance and leadership requirements. (Fall, spring, and summer).

EMSE 6005. Organizational Behavior for the Engineering Manager. 3 Credits.

The behavior of individuals and groups in the context of technical organizations, focusing on relationships and interactions within the organization's operating activities. Individual and group development and motivation. Organizational structures and cultures. (Fall and spring).

EMSE 6014. Management of Engineering Contracts. 3 Credits.

Study of the total contracting process (including initial budget preparation and justification, execution of a contract, and administration of the contract to completion) considered from the viewpoints of the industrial and government buyer and the seller of technical materials and services. (Fall).

EMSE 6018. Engineering Law. 3 Credits.

Legal principles and procedures of interest to engineers. The American legal system, contracts and specifications, liability of professional engineers, product liability, agency relationships, patent and proprietary rights, special problems in research and development contracts. (As required).

EMSE 6020. Decision Making with Uncertainty. 3 Credits.

Problem formulation. Concepts and techniques used in analyzing complex decision problems. Modeling decision problems using decision trees, probability models, multi-objective models and utility theory. (Fall, spring, and summer).

EMSE 6023. Technology Issue Analysis. 3 Credits.

Contextual background and intellectual basis for addressing technology issues in the public and private sectors. Technology impact assessment, forecasting, and innovation; principles and practices of technology transfer as elements of a systematic approach to making technology decisions. (Fall, odd years).

EMSE 6026. Technical Enterprises. 3 Credits.

Essential features of technology-based companies from the entrepreneur's point of view. Team preparation of a simulated business plan for a technology-based company. Designed for those working in technical firms and for government personnel who depend on technical firms as suppliers. (Spring, odd years).

EMSE 6030. Technological Forecasting and Management. 3 Credits.

Concepts and methods for understanding the dynamics of technological change. Issues in technology assessment, technology transfer, and strategic management of technology. (Spring, even years).

EMSE 6035. Marketing of Technology. 3 Credits.

Analysis of industrial marketing process and functions, providing concepts and tools for engineering managers to market high technology products and services. (Fall, odd years).

EMSE 6070. Management of Research and Development. 3 Credits.

Seminar on readings and classic and contemporary case studies in the strategic management of innovation and technology. (Fall and spring).

EMSE 6099. Problems in Engineering Management and Systems Engineering. 3 Credits.

Capstone project providing the opportunity to apply concepts and tools previously studied to the solution of a real-world problem. Students work in small groups, on a problem proposed by students and approved by the instructor. Open only to master's candidates in the department, preferably during the last semester of their program.

EMSE 6115. Uncertainty Analysis for Engineers. 3 Credits.

Basics of probability theory and statistics, with a focus on engineering applications, particularly in the realm of systems. Topics include simulation, uncertainty analysis, central limit theorem, systems examination and analysis, and application to systems design and management. Prerequisite: MATH 1231.

EMSE 6200. Policy Factors in Environmental and Energy Management. 3 Credits.

Exploration of the policy development process from several different but integrated perspectives. Focus on areas of environmental and energy management and use of current case studies to develop a framework of understanding to support decisions in a broad variety of management settings. (Fall, odd years).

EMSE 6220. Environmental Management. 3 Credits.

Technical, economic, political, administrative, and social forces influencing the quality of the environment and the use of resources. Government and industrial programs to combat pollution of the air, soil, and water; existing and pending pertinent legislation; theoretical aspects of specific management problems. (Fall).

EMSE 6225. Air Quality Management. 3 Credits.

The nature of critical local, regional, continental, and global problems associated with air pollution and the historical evolution of such problems. The complex regulatory and institutional framework controlling air quality management in the U.S. Current air quality management concepts and processes. (Spring).

EMSE 6230. Hazardous Waste Management and Cleanup. 3 Credits.

Hazardous waste management and cleanup processes used in the U.S. and around the world. The roles of the relevant federal, state, and local government agencies; major hazardous waste laws and regulations. Planning, assessment, investigation, design, and construction phases of hazardous waste remediation projects. (Spring, even years).

EMSE 6235. Water Quality Management. 3 Credits.

The nature of point and non-point sources of surface and ground water pollution and the statutory, regulatory, and institutional framework controlling water quality management activities in the U.S. Current approaches to water quality protection and enhancement. The role of engineered treatment processes in water quality management. (Fall).

EMSE 6240. Environmental Hazard Management. 3 Credits.

Geological, meteorological, radiological, chemical, and biological hazards facing the United States and international communities. Organizational responsibilities for hazard identification and risk management. Communication and perceptions of vulnerability and risk. Challenges to local governments and communities. (Spring, even years).

EMSE 6245. Analytical Tools for Environmental Management. 3 Credits.

A survey course in environmental management, focusing on tools to assess the environment: quantitative risk assessment, environmental valuation methodologies, Congressional activities, and environmental laws. The regulatory process as it relates to environmental management. Risk assessment and modeling approaches to solving environmental problems. (Spring, odd years).

EMSE 6260. Energy Management. 3 Credits.

Examination of the range of available energy resources, trends in their use, the programs and organizations that have developed and evolved to address problems associated with energy resource use. (Spring).

EMSE 6285. Analytical Tools for Energy Management. 3 Credits.

Analytical tools needed to manage energy resources at the facility level. Energy technologies: instrumentation, measurement, and control. Energy auditing; conservation techniques, financial and economic analysis, and maintenance of energy budgets. Functions of an energy management office of a large organization. (Fall, even years).

EMSE 6295. Environmental Security. 3 Credits.

EMSE 6300. Homeland Security: The National Challenge. 3 Credits.

The evolution of homeland security as a concept, legal framework, and redirection of national policies and priorities. Issues and problems of implementation. The terrorist threat and U.S. responses. Fundamental policy legislation and documents, such as national security strategies, homeland security decision directives, the NRF, and NIMS. (Spring).

EMSE 6305. Crisis and Emergency Management. 3 Credits.

Defining crises, emergencies, and disasters. Developing crisis, business continuity, and incident management plans. The National Response Framework, National Incident Management System, organizing for response, managing the response organization, managing in a turbulent environment, crisis decision making and communication. (Fall).

EMSE 6310. Information Technology in Crisis and Emergency Management. 3 Credits.

The role of information in crisis and response management; determining disaster and crisis information requirements; information technologies applied to crisis, disaster, and emergency management; causes and effects of information breakdowns during crises and disasters.

EMSE 6315. Management of Risk and Vulnerability for Hazards and Terrorism. 3 Credits.

Development of concepts required for risk-based planning and risk management. Objectives and methods for vulnerability assessment for natural disaster, technological hazards, and terrorist threats. Risk analysis, risk perception, risk communication, risk mitigation. (Fall).

EMSE 6320. International Disaster Management. 3 Credits.

Guiding principles, key institutions, operational requirements, policy issues, and broad fundamentals associated with international disaster risk reduction and humanitarian response to natural and man-made disasters and complex emergencies. (Fall).

EMSE 6325. Medical and Public Health Emergency Management. 3 Credits.

Medical and public health management issues encountered in crises, emergencies, and disasters for non-medical emergency managers. The spectrum of medical, public health, psychological and behavioral problems; incident management organization and processes that address these concerns and integrate medical and public health assets into the response. (Spring).

EMSE 6330. Management of Terrorism Preparedness and Response. 3 Credits.

Terrorism, terrorist methods, and human/infrastructure vulnerability. Current preparedness and response programs. Mitigation, preparedness, and response requirements to manage mass terrorism incidents within the context of all-hazard emergency management. Case studies. (Fall).

EMSE 6340. Geospatial Techniques. 3 Credits.

Integration of GIS, remote sensing, and spatial modeling. Same as GEOG 6221.

EMSE 6345. Disaster Recovery and Organizational Continuity. 3 Credits.

Disaster recovery planning and business continuity. Recovery of information and communication systems. The role of the private sector in mitigation and recovery. Public/private partnerships in community reconstruction and recovery. (Spring).

EMSE 6350. Hazard Mitigation in Disaster Management. 3 Credits.

Hazard mitigation and its role in disaster management; analysis of past and current government and private-sector programs; examination of new approaches; structural versus nonstructural actions; mitigation of terrorist attacks. (Fall).

EMSE 6410. Survey of Finance and Engineering Economics. 3 Credits.

Survey of material relevant to financial decision making for engineering activity. Includes traditional engineering economy topics; fundamentals of accounting; and financial planning, budgeting, and estimating applicable to the management of technical organizations. (Fall, spring, and summer).

EMSE 6420. Economic Analysis in Engineering Planning. 3 Credits.

Case studies in engineering economic analysis, capital budgeting, benefit-cost analysis, and other cost-related methodologies relevant to engineering managers. Prerequisite: EMSE 6410 or permission of instructor.

EMSE 6430. Finance for Engineers. 3 Credits.

Financial analysis and concepts useful to engineers: sources and uses of funds, management of working capital, leverage, valuation, forecasting, investment decisions. Prerequisite: EMSE 6410.

EMSE 6450. Quantitative Methods in Cost Engineering. 3 Credits.

Fitting exponential growth curves using cost data for forecasting; multiperiod capital budgeting using the analytical hierarchy process and optimization; and project network risk analysis. Case studies highlight theoretical complexities in solving problems. (Spring).

EMSE 6505. Knowledge Management I. 3 Credits.

The foundations of knowledge management, including cultural issues, technology applications, organizational concepts and processes, management aspects, and decision support systems. Case studies. (Fall).

EMSE 6506. Knowledge Management II. 3 Credits.

A capstone course. Students work in teams, applying principles and processes of systems thinking, systems engineering, and integrative management in the design and implementation of a knowledge management system. Prerequisite: EMSE 6505.

EMSE 6510. Decision Support Systems and Models. 3 Credits.

Theory of decision making—a cognitive view. Modeling decision maker heuristics and processes. Design, implementation, and evaluation of state-of-the-art DSS (hands-on). Assess impact of behavioral, situational, and organizational variables. (Fall).

EMSE 6537. Information Operations. 3 Credits.

National security concerns of governments and business about attacks across national borders and through physical protective mechanisms. The emergence of information technologies, from casual to full-fledged operational scale, to advance causes. Specific examples (e.g., attacks on Estonia, Palestinian conflict). (On demand).

EMSE 6540. Management of Information and Systems Security. 3 Credits.

Development and management of effective security systems. Includes information, personnel, and physical security. Emphasis on risk analysis for information protection. (Fall and summer).

EMSE 6543. Managing the Protection of Information Assets and Systems. 3 Credits.

Advanced topics in protection of information assets and systems, including authentication, asset control, security models and kernels, physical security, personnel security, operational security, administrative security, security configuration management, and resource control. Prerequisite: EMSE 6540.

EMSE 6544. Auditing, Monitoring, and Intrusion Detection for Information Security Managers. 3 Credits.

Methods for detecting problems with unauthorized activity in information systems and management challenges associated with those activities. Prerequisite: EMSE 6540.

EMSE 6545. Internet and On-Line Law for Security Managers. 3 Credits.

Legal issues regarding control of behavior, information security mechanisms, and information systems engineering in connected enterprises. Specific laws and regulations governing Internet and on-line activity, jurisdictional challenges associated with networked computing, and business law in cyberspace.

EMSE 6546. Cybercrime for Info Secur Mgrs. 3 Credits.

Legal issues regarding information security actions related to and in response to criminal activity, including industrial espionage, back-hacking, cracking, and cyberterrorism. Transnational issues, cybercrime treaties and conventions, and cyberwar issues. Prerequisite: EMSE 6545.

EMSE 6549. Business and Competitive Intelligence. 3 Credits.

Discovery and analysis of competitive information from open-source intelligence. Sources and methods for data collection; legal issues and constraints; analysis processes; longitudinal aspects; inference. (Spring).

EMSE 6570. Information Management and Information Systems. 3 Credits.

The use of information in organizations, the management of the information resource; the impact of information and communication technology. (Spring).

EMSE 6573. Managing E-Commerce Technologies. 3 Credits.

Principles of good e-business management. Methods of conducting e-commerce—major opportunities, limitations, issues, and risks. Popular technologies for building e-businesses, security authentication, privacy, acceptable use policies, and legal limits. (Fall, odd years).

EMSE 6579. Applied Data Mining in Engineering Management. 3 Credits.

Methods and techniques for discovering patterns and relationships in aggregated data, with practical focus on engineering problems. Tools, techniques, and methods explored in the context of their application. Prerequisite: EMSE 6020, EMSE 6586.

EMSE 6580. Information and Software Engineering. 3 Credits.

Introduction to analysis and design of information systems including requirements analysis, project management, and software architectures. Introduction to CASE tools. Prerequisite: EMSE 6570 or permission of instructor.

EMSE 6582. Object-Oriented Analysis and Design. 3 Credits.

The object-relationship model and the object-behavior model. Managing complexity with views and high-level modeling in object-oriented systems analysis. The concepts, the method, and applications, including object-based and object-oriented languages. Prerequisite: EMSE 6580.

EMSE 6584. Fundamentals of Artificial Intelligence. 3 Credits.

History of AI, expert systems, knowledge representation, search and control techniques, natural language processing, computer vision, computer speech, knowledge-based systems, and evidential reasoning. Hands-on experience with a knowledge-based shell. (Spring).

EMSE 6586. Database Design and Database Management Systems. 3 Credits.

Concepts, strategies, and features of database design and management. Analysis, design, and implementation of database systems for micro and mainframe applications. Development of a microcomputer database system. (Spring).

EMSE 6588. Software Project Development with CASE. 3 Credits.

Evaluation and selection of CASE tools, use of CASE tools in software design/project. Graphical user interface and re-engineering tools. Open only to master's candidates in the department during the last semester of their program. Prerequisite: EMSE 6580.

EMSE 6589. Data Communications and Networks. 3 Credits.

Technical and managerial aspects of data communications, with emphasis on communication networks. Methodologies used in data communications, communication networks, and distributed data processing. (On demand).

EMSE 6701. Operations Research Methods. 3 Credits.

Deterministic and stochastic methods. Optimization algorithms: Simplex method, Branch and Bound, combinatorial algorithms, heuristic methods. Optimization theory: convexity, duality, sensitivity analysis. Stochastic optimization: marginal analysis, Markov chains, Markov decision processes. Prerequisite: APSC 3115 or EMSE 6020, MATH 2233, or permission of instructor.

EMSE 6705. Mathematics in Operations Research. 3 Credits.

Mathematical foundations of optimization theory: linear algebra, advanced calculus, convexity theory. Geometrical interpretations and use of software. Prerequisite: MATH 2233.

EMSE 6710. Applied Optimization Modeling. 3 Credits.

Analysis of linear, integer, and nonlinear optimization models of decision problems that arise in industry, business, and government. Modeling techniques and applications; use of optimization software to solve models. Prerequisite: EMSE 6850 or permission of instructor.

EMSE 6715. Theory of Games. 3 Credits.

Mathematical models of conflict and cooperation with applications in economics, business, defense, transportation, and societal issues (voting schemes, fair division, auctions). Concept and computation of equilibrium in n-person games. Prerequisite: MATH 2233 or permission of instructor.

EMSE 6720. Topics in Optimization. 3 Credits.

Selected topics from the fields of linear programming, nonlinear programming, dynamic programming, heuristics, and constraint programming. May be repeated for credit provided the topic differs. Prerequisite: EMSE 6701 or permission of instructor.

EMSE 6730. Integer and Network Programming. 3 Credits.

Combinatorial optimization problems: algorithms and applications. Network problems: minimum spanning tree, shortest path, maximum flows, minimum cost flows, optimal matchings, routing problems. Complexity theory. Enumeration and cutting plane methods for solving integer programs. Prerequisite: EMSE 6701 or permission of instructor.

EMSE 6740. Systems Thinking and Policy Modeling I. 3 Credits.

Introduction to systems thinking and the system dynamics approach to policy analysis, with applications to business management and public policy. Causal-loop and stock and flow models of business growth, technology adoption, and marketing. Use of role-based games to explain key principles of systems. Use of simulation software to model problems and case studies.

EMSE 6745. Systems Thinking and Policy Modeling II. 3 Credits.

Case studies in dynamic policy analysis. Use of microcomputers in simulation. The class collectively models and simulates a social system to explore policy options. Prerequisite: EMSE 6740.

EMSE 6750. Stochastic Foundations of Operations Research. 3 Credits.

Topics in probability theory, stochastic processes, and statistical inference. Foundations of probability, conditional probability and expectation, Poisson processes, Markov chains, and Brownian motion. Prerequisite: APSC 3116 or permission of instructor.

EMSE 6755. Quality Control and Acceptance Sampling. 3 Credits.

Statistical approaches to quality assurance. Single and multivariate control charts, acceptance sampling by attributes and variables, process capability and design of experiments. Prerequisite: APSC 3115 or permission of instructor.

EMSE 6760. Discrete Systems Simulation. 3 Credits.

Simulation of discrete stochastic models. Simulation languages. Random-number/ random-variate generation. Statistical design and analysis of experiments, terminating/nonterminating simulations; comparison of system designs. Input distributions, variance reduction, validation of models. Same as STAT 4173. Prerequisite: APSC 3115; CSCI 1121, CSCI 1041, or CSCI 1111; or permission of instructor.

EMSE 6765. Data Analysis for Engineers and Scientists. 3 Credits.

Design of experiments and data collection. Regression, correlation, and prediction. Multivariate analysis, data pooling, data compression. Model validation. Prerequisite: APSC 3115.

EMSE 6770. Techniques of Risk Analysis and Management. 3 Credits.

Topics and models in current risk analysis; modern applications of risk-based planning and risk management; use of quantitative methods in risk analysis. (Spring).

EMSE 6790. Logistics Planning. 3 Credits.

Quantitative methods in model building for logistics systems, including organization, procurement, transportation, inventory, maintenance, and their interrelationships. Stresses applications. Prerequisite: APSC 3115, MATH 1232.

EMSE 6801. Systems Engineering I. 3 Credits.

Systems approach to the architecting and engineering of large-scale systems; elements of systems engineering; methods and standards; computer tools that support systems and software engineering; trends and directions; the integrative nature of systems engineering. (Fall, spring, and summer).

EMSE 6805. Systems Engineering II. 3 Credits.

Application of systems engineering tools to provide hands-on experience with essential elements of practice. Processes of requirements engineering, functional analysis and allocation, risk management, architecting; architectural heuristics, axiomatic design, analytical assessment of alternative architectures. Prerequisite: EMSE 6801.

EMSE 6810. Systems Analysis and Management. 3 Credits.

The systems or holistic approach as a methodology for making decisions and allocating resources. Analysis by means of objectives, alternatives, models, criteria, and feedback. Prerequisite: EMSE 6020.

EMSE 6815. Requirements Engineering. 3 Credits.

Requirements in systems engineering, including requirement types, quality factors, elicitation methods, analysis, derivation of implicit requirements, management, traceability, verification, cross-requirement assessments, and validation. Focus on writing and managing quality requirements in complex systems. Prerequisite: EMSE 6801.

EMSE 6820. Program and Project Management. 3 Credits.

Problems in managing projects; project management as planning, organizing, directing, and monitoring; project and corporate organizations; duties and responsibilities; the project plan; schedule, cost, earned-value and situation analysis; leadership; team building; conflict management; meetings, presentations, and proposals. (Fall).

EMSE 6825. Project Cost and Quality Management. 3 Credits.

Developing project cost and resource estimates during the planning stages. Monitoring, forecasting, and controlling cost throughout the project life cycle. Project quality planning, assurance, and control. Relationships among project scope, time, cost, quality, human resources, communications, procurement, and risk. Preparation for the Project Management Professional examination. Prerequisite: EMSE 6820.

EMSE 6830. Human Factors Engineering. 3 Credits.

Study of the human-machine interface applied to system design, job design, and technology management. Human sensory-motor, perceptual, and cognitive functions; task analysis and allocation; contextual aspects of human factors engineering. Modeling, design, and evaluation methodologies. Applications to user-centered industrial and information systems. (As required).

EMSE 6840. Applied Enterprise Systems Engineering. 3 Credits.

Applications of systems engineering in the DoD, other parts of the federal government, and commercial sectors. Architectural frameworks and enterprise architecting concepts and practices, including JCIDS/DODAF, Federal Enterprise Architecture Framework, and Zachman™ Framework. Enterprise architecting and advanced modeling tools. Prerequisite: EMSE 6805.

EMSE 6850. Quantitative Models in Systems Engineering. 3 Credits.

Quantitative modeling techniques and their application to decision making in systems engineering. Linear, integer, and nonlinear optimization models. Stochastic models: inventory control, queuing systems, and regression analysis. Elements of Monte Carlo and discrete event system simulation. Prerequisite: APSC 3115 or EMSE 6020.

EMSE 6855. Reliability Analysis and Infrastructure Systems. 3 Credits.

Modeling basic variables and defining the limit-state surface. Computing the reliability index of an infrastructure system by approximating the limit-state surface—FORM and SORM. Modeling an infrastructure system. Reliability analysis using branch and bound, failure paths and failure modes, identification of dominant failure paths. Case studies. (Fall).

EMSE 6991. Project for Professional Degree. 3 Credits.

Limited to students in the Applied Scientist or Engineer degree program.

EMSE 6992. Special Topics. 3 Credits.

Selected topics in engineering management and systems engineering, as arranged. May be repeated for credit. Prerequisite: permission of instructor.

EMSE 6995. Research. 1-12 Credits.

Basic or applied research in engineering management or systems engineering. Open to master's degree candidates in the department. May be repeated for credit.

EMSE 6997. Advanced Topics in Operations Research. 3 Credits.

Advanced topics from the literature of operations research for analysis, presentation, and discussion. Reading assignments from professional journals selected by the instructor and the student. May be repeated for credit. Prerequisite: permission of instructor.

EMSE 6998. Thesis Research. 3 Credits.**EMSE 6999. Thesis Research. 3 Credits.****EMSE 8000. Research Methods for the Engineering Manager. 3 Credits.**

Advanced course in research, experimental, and statistical methods for engineering management. Restricted to EMSE Ph.D. students. Prerequisite: EMSE 6020 or permission of instructor.

EMSE 8010. Advanced Topics in Optimization. 3 Credits.

May be repeated for credit provided the topic differs. Prerequisite: EMSE 6701, EMSE 6705 or permission of instructor.

EMSE 8020. Advanced Stochastic Models in Operations Research. 3 Credits.

Applied probability models, including the Poisson process, continuous-time, denumerable-state Markov processes, renewal theory, semi-Markov regenerative processes. Applications to queues, inventories, and other operations research systems. Prerequisite: permission of instructor.

EMSE 8998. Adv Reading & Research. 1-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

EMSE 8999. Dissertation Research. 1-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

ENGLISH (ENGL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ENGL 0071. Creative Non-Fiction Workshop. 2 Credits.

ENGL 1000. Dean's Seminar. 3 Credits.

ENGL 1210. Introduction to Creative Writing. 3 Credits.

An exploration of genres of creative writing (fiction, poetry, and/or playwriting). Basic problems and techniques; examples of modern approaches; weekly writing assignments; workshop and/or conference discussion of student writing.

ENGL 1305. Colonial/Post-Colonial British Literature. 3 Credits.

ENGL 1315. Literature and the Financial Imagination. 3 Credits.

Literary studies focused broadly on representations of business, finance, or commerce; the economics of literary production; and/or theories of economic class as they pertain to literary works. Topic, genre, and time period varies by instructor. (Fall and spring).

ENGL 1320. Literature of the Americas. 3 Credits.

American literature considered in a transhemispheric framework as writing that probes and spans the boundaries of the nation, connecting the United States to the rest of the Americas and to other parts of the globe.

ENGL 1320W. Literature of the Americas. 0-3 Credits.

American literature considered in a transhemispheric framework as writing that probes and spans the boundaries of the nation, connecting the United States to the rest of the Americas and to other parts of the globe.

ENGL 1330. Myths of Britain. 3 Credits.

Why much great English literature turns out not to be so English after all. The early literature of the island within a transnational frame. Readings range from Beowulf to Arthurian myths to Shakespeare.

ENGL 1330W. Myths of Britain. 3 Credits.

Why much great English literature turns out not to be so English after all. The early literature of the island within a transnational frame. Readings range from Beowulf to Arthurian myths to Shakespeare.

ENGL 1340. Shakespeare's Globe. 3 Credits.

Links between Shakespeare's geographical and theatrical "Globes." How did Shakespeare and his company represent racial, cultural, and linguistic difference in the Globe? What place did they imagine for England and Europe in this newly globalized world?

ENGL 1340W. Shakespeare's Globe. 0-3 Credits.

Links between Shakespeare's geographical and theatrical "Globes." How did Shakespeare and his company represent racial, cultural, and linguistic difference in the Globe? What place did they imagine for England and Europe in this newly globalized world?

ENGL 1410. Introduction to English Literature. 3 Credits.

Representative works by major British authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature. Middle Ages through the 18th century.

ENGL 1410W. Introduction to English Literature I. 3 Credits.

Representative works by major British authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature. Middle Ages through the 18th century.

ENGL 1411. Introduction to English Literature. 3 Credits.

Continuation of ENGL 1410. Representative works by major British authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature. 19th and 20th centuries.

ENGL 1411W. Introduction to English Literature II. 3 Credits.

Continuation of ENGL 1410. Representative works by major British authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature. 19th and 20th centuries.

ENGL 1510. Introduction to American Literature. 3 Credits.

Historical survey. From early American writing through Melville, Whitman, and Dickinson.

ENGL 1510W. Introduction to American Literature I. 3 Credits.

Historical survey. From early American writing through Melville, Whitman, and Dickinson.

ENGL 1511. Introduction to American Literature. 3 Credits.

Continuation of ENGL 1510. Historical survey. From Twain, James, and Crane to the present.

ENGL 1511W. Introduction to American Literature II. 3 Credits.

Continuation of ENGL 1510. Historical survey. From Twain, James, and Crane to the present.

ENGL 1610. Introduction to Black American Literature. 3 Credits.

Survey of several genres of African American literature. From the 18th through the late 19th centuries, in such cultural contexts as the developing concept of "race."

ENGL 1610W. Introduction to Black American Literature I. 3 Credits.

Survey of several genres of African American literature. From the 18th through the late 19th centuries, in such cultural contexts as the developing concept of "race."

ENGL 1611. Introduction to Black American Literature. 3 Credits.

Continuation of ENGL 1610. Survey of several genres of African American literature. From the early 20th century to the present day, in such cultural contexts as the "new Negro" Renaissance and the civil rights and Black Power movements.

ENGL 1611W. Introduction to Black American Literature II. 3 Credits.

Continuation of ENGL 1610. Survey of several genres of African American literature. From the early 20th century to the present day, in such cultural contexts as the “new Negro” Renaissance and the civil rights and Black Power movements.

ENGL 1710. Introduction to Postcolonial Literature. 3 Credits.

Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora.

ENGL 1710W. Introduction to Postcolonial Literature I. 3 Credits.

Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora.

ENGL 1711. Introduction to Postcolonial Literature. 3 Credits.

Continuation of ENGL 1710. Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora.

ENGL 1711W. Introduction to Postcolonial Literature II. 3 Credits.

Continuation of ENGL 1710. Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora.

ENGL 1830. Tragedy. 3 Credits.

Modes of tragedy as developed in drama, nondramatic verse, and prose fiction in literature from ancient to modern times—Book of Job to Beckett. (Fall and spring).

ENGL 1830W. Tragedy. 3 Credits.

Modes of tragedy as developed in drama, nondramatic verse, and prose fiction in literature from ancient to modern times—Book of Job to Beckett.

ENGL 1840. Comedy. 3 Credits.

Modes of comedy as developed in drama, nondramatic verse, and prose fiction—Chaucer to Borges. (Fall and spring).

ENGL 1840W. Comedy. 3 Credits.

Modes of comedy as developed in drama, nondramatic verse, and prose fiction—Chaucer to Borges.

ENGL 2240. Play Analysis. 3 Credits.

Traditional and nontraditional (Aristotelian and non-Aristotelian) approaches to the analysis of dramatic literature; literary and theatrical techniques used by playwrights. Same as TRDA 2240.

ENGL 2250. Dramatic Writing. 3 Credits.

A workshop in playwriting and screenwriting, with emphasis on dramatic structure. Same as TRDA 2250. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2460. Fiction Writing. 3 Credits.

The writing of fiction. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2470. Poetry Writing. 3 Credits.

The writing of poetry. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2560. Intermediate Fiction Writing. 3 Credits.

The writing of fiction. Prerequisite: ENGL 2460 .

ENGL 2570. Intermediate Poetry Writing. 3 Credits.

The writing of poetry. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2800. Critical Methods. 3 Credits.

The topics and techniques of literary analysis, applied to English and American poetry, prose fiction, and drama. Attention to stylistic and structural analysis, narratology, and critical theory applied to specific literary texts. (Fall and spring).

ENGL 2800W. Critical Methods. 3 Credits.

The topics and techniques of literary analysis, applied to English and American poetry, prose fiction, and drama. Attention to stylistic and structural analysis, narratology, and critical theory applied to specific literary texts.

ENGL 3240. Introduction to Dramaturgy. 3 Credits.

Fundamentals of classical and contemporary dramaturgical practice, including analyzing plays, doing research, supporting directors and actors in rehearsal, writing program notes, and leading post-show discussions. Same as TRDA 3240.

ENGL 3250. Intermediate Dramatic Writing. 3 Credits.

A workshop developing scripts for both theatre and film. Same as TRDA 3250. Prerequisite: ENGL 2250 . May be repeated for credit with departmental approval.

ENGL 3360. Advanced Fiction Writing. 3 Credits.

Further workshop study of the writing of fiction. Prerequisite: ENGL 2560 . May be repeated for credit with departmental approval.

ENGL 3370. Advanced Poetry Writing. 3 Credits.

Further workshop study of the writing of poetry. Prerequisite: ENGL 2570 . May be repeated for credit with departmental approval.

ENGL 3380. Creative Writing Workshop. 3 Credits.

Taught by the Jenny McKean Moore Writer in Washington; for undergraduates and graduate students. Prerequisite: an upper-division creative writing course. May be repeated for credit if taught by a different instructor.

ENGL 3390. Topics in Creative Writing. 3 Credits.

Topics announced prior to the registration period; may be repeated for credit provided the topic differs. Topics may include poetry and poetics; forms and methods in fiction; forms and methods in poetry; memoir and personal narratives; creative nonfiction; "Literature, Live"; avant-garde and experimental writing.

ENGL 3410. Chaucer. 3 Credits.

Chaucer's major works seen as exciting, lively texts from the modern perspective and as products of specific economic, social, and cultural trends of the late 14th century. Focus on *The Canterbury Tales*, read in the original Middle English.

ENGL 3410W. Chaucer. 3 Credits.

Chaucer's major works seen as exciting, lively texts from the modern perspective and as products of specific economic, social, and cultural trends of the late 14th century. Focus on *The Canterbury Tales*, read in the original Middle English.

ENGL 3420. Medieval Literature. 3 Credits.

Readings from a wide range of medieval genres, including romances, saints' legends, mystical narratives, lyrics, civic drama, and social satires. How these texts responded to and shaped changing patterns of medieval culture, as the clergy, the aristocracy, and the urban bourgeoisie attempted to define a culture of their own.

ENGL 3420W. Medieval Literature. 3 Credits.

Readings from a wide range of medieval genres, including romances, saints' legends, mystical narratives, lyrics, civic drama, and social satires. How these texts responded to and shaped changing patterns of medieval culture, as the clergy, the aristocracy, and the urban bourgeoisie attempted to define a culture of their own.

ENGL 3430. The English Renaissance. 3 Credits.

Verse and prose written in the period 1515-1625, examined in relation to cultural practices and social institutions that shaped English life. More, Sidney, Spenser, Shakespeare, Donne, Jonson, Bacon, Herbert, many others.

ENGL 3440. Shakespeare I. 3 Credits.

Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3440W. Shakespeare I. 3 Credits.

Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3441. Shakespeare II. 3 Credits.

Continuation of ENGL 3440. Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3441W. Shakespeare II. 3 Credits.

Continuation of ENGL 3440. Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3450. Topics in Shakespeare Studies. 3 Credits.

Critical study of a particular aspect of Shakespeare's work, or of a distinctive approach to the plays. Projected topics: Shakespeare on film, the history plays and Elizabethan England, 18th-century rewritings of Shakespeare, Shakespeare as poet, cultural materialist readings of Shakespeare.

ENGL 3460. Milton. 3 Credits.

Study of the major works in verse and prose, following the course of Milton's career.

ENGL 3470. English Drama I. 3 Credits.

Shakespeare's contemporaries.

ENGL 3471. English Drama II. 3 Credits.

Continuation of ENGL 3470. Historical survey, 1660 to present.

ENGL 3480. The Eighteenth Century I. 3 Credits.

Readings in significant 18th-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

ENGL 3480W. The Eighteenth Century I. 3 Credits.

Readings in significant 18th-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

ENGL 3481. The Eighteenth Century II. 3 Credits.

Continuation of ENGL 3480. Readings in significant 18th-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

ENGL 3481W. The Eighteenth Century II. 3 Credits.

Continuation of ENGL 3480. Readings in significant 18th-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

ENGL 3490. Early American Literature and Culture. 3 Credits.

The shaping of America's early literary and cultural traditions as shown by significant writers of the colonial and early national periods: Bradstreet, Cotton Mather, Edwards, Franklin, Crèvecoeur, and others. (Fall).

ENGL 3490W. Early American Literature and Culture. 3 Credits.

The shaping of America's early literary and cultural traditions as shown by significant writers of the colonial and early national periods: Bradstreet, Cotton Mather, Edwards, Franklin, Crèvecoeur, and others.

ENGL 3510. Children's Literature. 3 Credits.

Nineteenth- and twentieth-century children's texts that illuminate the several worlds of childhood: the "small world" of childhood perception, the larger world of social and historical forces, and the "secondary world" of fantasy.

ENGL 3520. American Romanticism. 3 Credits.

The shaping of America's literary and cultural traditions as shown by significant writers of the Romantic era: Poe, Emerson, Hawthorne, Melville, Thoreau, Whitman, Dickinson, and others. (Spring).

ENGL 3520W. American Romanticism. 3 Credits.

The shaping of America's literary and cultural traditions as shown by significant writers of the Romantic era: Poe, Emerson, Hawthorne, Melville, Thoreau, Whitman, Dickinson, and others.

ENGL 3530. The Romantic Movement. 3 Credits.

Major figures and topics in English and Continental romanticism: Blake, Wordsworth, Coleridge, Lamb, Byron, Shelley, Keats, Hazlitt, DeQuincey, and others.

ENGL 3530W. The Romantic Movement. 3 Credits.

Major figures and topics in English and Continental romanticism: Blake, Wordsworth, Coleridge, Lamb, Byron, Shelley, Keats, Hazlitt, DeQuincey, and others.

ENGL 3540. Victorian Literature I. 3 Credits.

ENGL 3540W. Victorian Literature I. 3 Credits.

Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3541. Victorian Literature II. 3 Credits.

Continuation of ENGL 3540. 1865–1900—Eliot, Hardy, Conrad; Swinburne, the Rossettis, Morris; Pater, Wilde, the Nineties.

ENGL 3550. The English Novel I. 3 Credits.

The 18th century—Defoe, Richardson, Fielding, Sterne, and others.

ENGL 3551. The English Novel II. 3 Credits.

Continuation of ENGL 3550. The 19th century—Austen, the Brontës, Dickens, George Eliot, Hardy, and others.

ENGL 3551W. The English Novel II. 3 Credits.

Continuation of ENGL 3550. The 19th century—Austen, the Brontës, Dickens, George Eliot, Hardy, and others.

ENGL 3560. American Realism. 3 Credits.

The shaping of America's literary and cultural traditions as shown by significant writers of the Realist school: Twain, James, Crane, Howells, Wharton, Chopin, Robinson, and others. (Fall).

ENGL 3560W. American Realism. 3 Credits.

The shaping of America's literary and cultural traditions as shown by significant writers of the Realist school: Twain, James, Crane, Howells, Wharton, Chopin, Robinson, and others.

ENGL 3570. 19th-Century Black Literature. 3 Credits.

Studies in 19th-century black literature of the Americas and the transatlantic. Writing from the United States, Latin America, the Caribbean, Britain, and Africa may be included. Topics and emphasis may vary.

ENGL 3610. Modernism. 3 Credits.

The emergence of modernist experimentation (and the sense of epistemological and moral crisis it expressed) in the poetry and prose of Pound, T.S. Eliot, Woolf, Kafka, and others.

ENGL 3620. American Poetry I. 3 Credits.

Close examination of major American poems. From the beginnings to the early 20th century: works by Poe, Emerson, Whitman, Dickinson, and others.

ENGL 3620W. American Poetry I. 3 Credits.

Close examination of major American poems. From the beginnings to the early 20th century: works by Poe, Emerson, Whitman, Dickinson, and others.

ENGL 3621. American Poetry II. 3 Credits.

Continuation of ENGL 3620. Close examination of major American poems. Since the early 20th century: Frost, Eliot, Stevens, Bishop, Hughes, Ashbery, and others.

ENGL 3621W. American Poetry I. 3 Credits.

Continuation of ENGL 3620. Close examination of major American poems. Since the early 20th century: Frost, Eliot, Stevens, Bishop, Hughes, Ashbery, and others.

ENGL 3630. American Drama I. 3 Credits.

19th-century melodrama and the emergence of realism; works by O'Neill and other dramatists of the early 20th century.

ENGL 3631. American Drama II. 3 Credits.

Continuation of ENGL 3630. Developments in modern American drama since World War II, including works by Williams, Miller, Albee, Shepard, Rabe, Guare, Mamet, Henley, Wasserstein, Shange, Hwang, Wilson, and others.

ENGL 3640. The American Novel I. 3 Credits.

Historical and critical study of major works in the American novelistic tradition. From the beginnings through the 19th century: Hawthorne, Melville, James, Twain, Dreiser, and others.

ENGL 3640W. The American Novel I. 3 Credits.

Historical and critical study of major works in the American novelistic tradition. From the beginnings through the 19th century: Hawthorne, Melville, James, Twain, Dreiser, and others.

ENGL 3641. The American Novel II. 3 Credits.

Continuation of ENGL 3640. Historical and critical study of major works in the American novelistic tradition. The 20th century: Wharton, Cather, Anderson, Hemingway, Fitzgerald, Faulkner, Wright, R.P. Warren, Nabokov, and others.

ENGL 3641W. The American Novel II. 3 Credits.

Continuation of ENGL 3640. Historical and critical study of major works in the American novelistic tradition. The 20th century: Wharton, Cather, Anderson, Hemingway, Fitzgerald, Faulkner, Wright, R.P. Warren, Nabokov, and others.

ENGL 3650. The Short Story. 3 Credits.

An extensive survey of short fiction by a wide variety of writers of the 19th and 20th centuries, about half of them American; readings on the art of the short story by writers and literary critics.

ENGL 3660. 20th-Century Irish Literature I. 3 Credits.

Irish writers from the time of the literary revival in the late 19th century to the present. Yeats and other Irish poets and playwrights of his time and after—Synge, O'Casey, Kavanagh, Heaney, and others.

ENGL 3661. 20th-Century Irish Literature II. 3 Credits.

Continuation of ENGL 3660. Irish writers from the time of the literary revival in the late 19th century to the present. Joyce through Ulysses and other fiction writers of later generations—O'Brien, Beckett, and others.

ENGL 3661W. 20th-Century Irish Literature I. 3 Credits.

Continuation of ENGL 3660. Irish writers from the time of the literary revival in the late 19th century to the present. Joyce through Ulysses and other fiction writers of later generations—O'Brien, Beckett, and others.

ENGL 3710. Contemporary Drama. 3 Credits.

Examines drama written since 1960 in the light of postmodernism as both a literary and a theatrical theory. Explores the ways contemporary playwrights and directors challenge the perceptions and assumptions of today's audience.

ENGL 3710W. Contemporary Drama. 3 Credits.

Examines drama written since 1960 in the light of postmodernism as both a literary and a theatrical theory. Explores the ways contemporary playwrights and directors challenge the perceptions and assumptions of today's audience.

ENGL 3720. Contemporary American Literature. 3 Credits.

Historical, critical, and theoretical study of American literature since the 1960s. Various authors and genres.

ENGL 3720W. Contemporary American Literature I. 3 Credits.

Historical, critical, and theoretical study of American literature since the 1960s. Various authors and genres.

ENGL 3721. Contemporary American Literature. 3 Credits.

Continuation of ENGL 3720. Historical, critical, and theoretical study of American literature since the 1960s. Various authors and genres.

ENGL 3721W. Contemporary American Literature II. 3 Credits.

Continuation of ENGL 3720. Historical, critical, and theoretical study of American literature since the 1960s. Various authors and genres.

ENGL 3730. Topics in Postcolonial Literature. 3 Credits.

Historical, critical, and theoretical study of post-colonial literatures—African, Asian, Commonwealth—written in English. Topics vary with instructor; may be repeated for credit provided the topic differs.

ENGL 3730W. Topics in Postcolonial Literature. 3 Credits.

Historical, critical, and theoretical study of post-colonial literatures—African, Asian, Commonwealth—written in English. Topics vary with instructor; may be repeated for credit provided the topic differs.

ENGL 3810. Selected Topics in Literature. 3 Credits.

Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs. Topics may include the Bloomsbury group; southern literature; the picaresque; literature of the Holocaust; literature and politics; Freud, Dostoevsky, and Shakespeare.

ENGL 3810W. Selected Topics in Literature. 3 Credits.

Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs. Topics may include the Bloomsbury group; southern literature; the picaresque; literature of the Holocaust; literature and politics; Freud, Dostoevsky, and Shakespeare.

ENGL 3820. Major Authors. 3 Credits.

In-depth studies of a single figure or two or three authors (of British, American, or other nationality) who have written in English. Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs.

ENGL 3820W. Major Authors. 3 Credits.

In-depth studies of a single figure or two or three authors (of British, American, or other nationality) who have written in English. Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs.

ENGL 3830. Topics in Literary Theory/Cultural Studies. 3 Credits.

Selected topics in the diverse theoretical methodologies and interdisciplinary studies that characterize contemporary English and American literary studies. May be repeated for credit provided that topic differs.

ENGL 3830W. Topics in Literary Theory. 3 Credits.

Selected topics in the diverse theoretical methodologies and interdisciplinary studies that characterize contemporary English and American literary studies. May be repeated for credit provided that topic differs.

ENGL 3840. Gender and Literature. 3 Credits.

Symbolic representations of culturally defined roles and assumptions in literature. Male and female gender roles as fundamental to culture; the representation of culture, in literature especially and in the arts and humanities generally. May be repeated for credit provided the topic differs.

ENGL 3840W. Gender and Literature. 3 Credits.

Symbolic representations of culturally defined roles and assumptions in literature. Male and female gender roles as fundamental to culture; the representation of culture, in literature especially and in the arts and humanities generally. May be repeated for credit provided the topic differs.

ENGL 3850. Ethnicity and Place in American Literature. 3 Credits.

The relationships among ethnic identity, authorship, regional setting, and national consciousness. Differences in the literary culture of ethnically, racially, and regionally diverse American populations; how considerations of ethnicity and place have been reshaping the American literary canon. Texts and emphases vary with instructor.

ENGL 3860. Topics in the History of the English Language. 3 Credits.

The cultural and literary functions of English across time and space. Scope and methodology vary by instructor. Topics may include language and identity, theoretical and linguistic approaches to language, multilingualism, diasporic writing, or history and periodization.

ENGL 3910. Disability Studies. 3 Credits.

Consideration of cultural texts that illustrate or illuminate issues of ability and disability—terms that extend the prism through which human experience may be understood. May be repeated once for credit provided the topic differs.

ENGL 3920. U.S. Latina/o Literature and Culture. 3 Credits.

Introduction to the basic texts in the Chicana/o, Cuban-American, Dominican-American, and Puerto Rican literary and cultural traditions. Works by U.S. writers of Central American origin are discussed as well.

ENGL 3930. Topics in U.S. Latina/o Literature and Culture. 3 Credits.

In-depth exploration of a critical issue in the field of Latina/o literary and cultural studies. Topics may include ideologies of literary recovery, transnationalism and diaspora, blackness and *latinidad*.

ENGL 3930W. Topics in Creative Writing. 3 Credits.

In-depth exploration of a critical issue in the field of Latina/o literary and cultural studies. Topics may include ideologies of literary recovery, transnationalism and diaspora, blackness and *latinidad*.

ENGL 3940. Topics in African American Literary Studies. 3 Credits.

Intensive study of a single aspect of African American literature: major authors, genre, theme, movement. Substantial attention to the critical tradition.

ENGL 3945. African American Poetry. 3 Credits.

Topics in African American poetry from the Black Atlantic through contemporary spoken word and web-based experiments in hypertext composition. Topics vary. Possible topics may be Langston Hughes, Gwendolyn Brooks, poetry manifestoes, poetry and social justice, or eco-poetics of the black experience.

ENGL 3950. Cultural Theory and Black Studies. 3 Credits.

Selected topics in critical and cultural theories—often interdisciplinary—as used in understanding African American literature and culture. Topics may include genre, medium, period, social change, and leading contemporary African American thinkers/writers.

ENGL 3950W. Cultural Theory and Black Studies. 3 Credits.

Selected topics in critical and cultural theories—often interdisciplinary—as used in understanding African American literature and culture. Topics may include genre, medium, period, social change, and leading contemporary African American thinkers/writers.

ENGL 3960. Asian American Literature. 3 Credits.

How Asian American writers construct their identities in dialogue with shifting ideas of “America.” Asian American history, gendering subjects, orientalism and postcolonial subjectivity, interracial relations, canonization. Representative writers: Kingston, Hwang, Jen, Chang-rae Lee, Ondaatje, Lahiri, Bulosan, Hagedorn.

ENGL 3960W. Asian American Literature. 3 Credits.

How Asian American writers construct their identities in dialogue with shifting ideas of “America.” Asian American history, gendering subjects, orientalism and postcolonial subjectivity, interracial relations, canonization. Representative writers: Kingston, Hwang, Jen, Chang-rae Lee, Ondaatje, Lahiri, Bulosan, Hagedorn.

ENGL 3965. Topics in Asian American Cultural Studies. 3 Credits.

Consideration of Asian American literature as a tradition that questions mainstream constructions of Asian American race and ethnicities, provides alternative accounts of Asian American experiences, and examines how Asian American literature is becoming a global literature with global concerns.

ENGL 3970. Jewish American Literature. 3 Credits.

Consideration of Asian American literature as a tradition that questions mainstream constructions of Asian American race and ethnicities, provides alternative accounts of Asian American experiences, and examines how Asian American literature is becoming a global literature with global concerns.

ENGL 3970W. Jewish American Literature. 3 Credits.

One hundred years of Jewish American writing in fiction, autobiography, poetry, drama, and non-fictional prose. The immigrant experience, American philosemitism and antisemitism, the Holocaust and after, the New York intellectuals, Jewish feminism, and the patriarchal tradition.

ENGL 3980. Queer Studies. 3 Credits.

Examination of literature and culture in the context of the history and experience of lesbian, gay, bisexual, and transgendered people, with consideration of sexual identity as a core component of human experience. May be repeated once for credit provided the topic differs.

ENGL 3980W. Queer Studies. 3 Credits.

ENGL 3990. Literary Studies Workshop. 1 Credit.

Examination of literature and culture in the context of the history and experience of lesbian, gay, bisexual, and transgendered people, with consideration of sexual identity as a core component of human experience. May be repeated once for credit provided the topic differs.

ENGL 4020. Studies in Contemporary Literature. 1-3 Credits.**ENGL 4040. Honors Seminar. 3 Credits.**

Genre and genre theory; literature as cultural artifact and as instrument of cultural criticism; various critical approaches—ideological, historical, and ahistorical. Open only to first-semester senior honors candidates in English.

ENGL 4040W. Honors Seminar. 3 Credits.

Genre and genre theory; literature as cultural artifact and as instrument of cultural criticism; various critical approaches—ideological, historical, and ahistorical. Open only to first-semester senior honors candidates in English.

ENGL 4135. Folger Seminar. 3 Credits.

The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as HIST 4135/ FREN 4135.

ENGL 4220. Creative Writing Senior Thesis. 3 Credits.

Under the guidance of an instructor, the student composes an original manuscript of poetry or short fiction accompanied by an essay situating the student's work in the contemporary context. Open only to seniors admitted to the English and creative writing major.

ENGL 4220W. Creative Writing Senior Thesis. 3 Credits.

Under the guidance of an instructor, the student composes an original manuscript of poetry or short fiction accompanied by an essay situating the student's work in the contemporary context. Open only to seniors admitted to the English and creative writing major.

ENGL 4250. Honors Thesis. 3 Credits.

Under the guidance of an instructor, the student writes a thesis on an approved topic. Open only to senior honors candidates in English.

ENGL 4250W. Honors Thesis. 3 Credits.

Under the guidance of an instructor, the student writes a thesis on an approved topic. Open only to senior honors candidates in English.

ENGL 4360. Independent Study. 1-4 Credits.

For exceptional students, typically majors, whose academic objectives are not accommodated in regular courses. Students must obtain departmental approval and arrange for supervision by an appropriate member of the faculty.

ENGL 4470. Internship. 1-4 Credits.

Position of responsibility with a publication, educational project, firm, or cultural organization offering practical experience in research, writing, editing, etc. Restricted to junior and senior English majors; approval of supervising faculty required for registration. May be repeated for credit; a maximum of 3 credits may be counted toward the English major. P/NP grading only.

ENGL 6100. Introduction to Literary Theory. 3 Credits.

An overview of methodologies for examining texts as linguistic and cultural productions. Methodologies explored may include structuralism, formalism, deconstruction, cultural materialism, postcolonial theory, feminism, gender studies, and queer theory.

ENGL 6120. Advanced Literary Theory. 3 Credits.

The course focuses on a major figure or topic in theory (e.g., Foucault, Lacan, Barthes, Kristeva, Bakhtin, post-Marxist theory, language and power, the canon).

ENGL 6130. Selected Topics in Criticism. 3 Credits.

Topics may include cultural studies, film, gay/lesbian studies, others.

ENGL 6220. Topics in Medieval and Early Modern Studies. 3 Credits.

Topics may include gender and body; postcolonial approaches to the period; surveys of poetry and/or prose with a special thematic coherence. (Fall).

ENGL 6240. Literature of the British Archipelago. 3 Credits.

The literary and historical texts of early modern and medieval Britain within a pan-insular framework: England in conflict and coexistence with Ireland, Wales, Scotland. (Fall).

ENGL 6250. Transnational England. 3 Credits.

The early literature of England within a global framework: England, Spain, France, Italy, Turkey, the Levant, the Americas, Africa, India, the Caribbean. (Spring).

ENGL 6260. Seminar in Medieval and Early Modern Studies. 3 Credits.

Trends and cutting-edge research in medieval and early modern studies. (Spring).

ENGL 6350. Nineteenth Century I. 3 Credits.

Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6351. Nineteenth Century II. 3 Credits.

Continuation of ENGL 6350. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6352. Nineteenth Century III. 3 Credits.

Continuation of ENGL 6351. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6353. Nineteenth Century IV. 3 Credits.

Continuation of ENGL 6352. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6450. Twentieth Century I. 3 Credits.

Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6451. Twentieth Century II. 3 Credits.

Continuation of ENGL 6450. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6452. Twentieth Century III. 3 Credits.

Continuation of ENGL 6451. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6453. Twentieth Century IV. 3 Credits.

Continuation of ENGL 6452. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6510. Writing, Race and Nation. 3 Credits.

Literary culture as a basis for exploration of intersections of origins and evolution of racial and ethnic identities and national myths and political objectives.

ENGL 6520. Ethnicity and Identity. 3 Credits.

Literary culture is used to explore how individuals, communities, and societies construct self-awareness and knowledge about others for cultural exchange.

ENGL 6530. Conceptualizing Genders. 3 Credits.

Structures of sex and gender difference considered historically and theoretically, including masculinity/femininity, sexualities, and their textual representations.

ENGL 6540. Women and Writing. 3 Credits.

Selected topics in the traditions, theory, and texts of women's literary production and culture. Same as WSTU 6251.

ENGL 6550. Studies in Genre I. 3 Credits.

Questions of genre, considered theoretically and practically. Content varies.

ENGL 6551. Studies in Genre II. 3 Credits.

Continuation of ENGL 6550. Questions of genre, considered theoretically and practically. Content varies.

ENGL 6560. Postcolonialism. 3 Credits.

Postcolonial theory and texts by representative writers.

ENGL 6620. Medicine and Society. 3 Credits.

The interaction of medicine and society in ways that touch on philosophy, economics, sociology, and public policy, but that cannot be fully understood in terms of any single perspective. Society's effect on medicine and medicine's effect on society.

ENGL 6630. Literature and Medicine. 3 Credits.

Methods of critical theory applied to issues concerning the practice of medicine. The polar constructs of illness and health, life and death, and life's worth or its waste.

ENGL 6720. Independent Research. 3 Credits.

Written permission of instructor required. May be repeated for credit to a maximum of 9 hours.

ENGL 6740. Mastering the Canon. 3 Credits.

Independent reading under a faculty member.

ENGL 6810. Folger Institute Seminars I. 3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the graduate advisor before registration.

ENGL 6811. Folger Institute Seminars II. 3 Credits.

Continuation of ENGL 6810. Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the graduate advisor before registration.

ENGL 6998. Thesis Research. 3 Credits.**ENGL 6999. Thesis Research. 3 Credits.****ENGL 8998. Advanced Reading and Research. 1-12 Credits.**

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

ENGL 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

ENGLISH FOR ACADEMIC PURPOSES (EAP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EAP 1010. Academic Communication. 3 Credits.

Development of oral academic skills necessary for success in academic settings, including listening and note-taking, participating in class discussions, and delivering presentations. Additional emphasis on developing multi-literacy through intercultural, multimedia, and visual communication. (Fall, spring, and summer).

EAP 1015. American Multicultural Perspectives in Washington, D.C.. 3 Credits.

A structured academic writing course that explores the capital's rich multicultural heritage through diverse texts and community resources. Designed to prepare international students for university-level writing expectations. Upon successful completion of EAP 1015, students take UW 1020. (Fall, spring, and summer).

EAP 1016. Academic Skills Workshop. 1 Credit.

Development of critical academic skills for international students. Workshop topics may include critical reading, listening and note-taking, academic vocabulary development, timed writing practice, and discussion and presentation skills. Credit for this course cannot be applied to a degree. (Fall, spring, and summer).

EAP 1046. EAP Tutorial. 1-4 Credits.

Individualized instruction in specific skill areas. Language Center approval required. Tuition is charged at the rate of 1, 2, 3, or 4 credits, for 1, 2, 3, or 4 hours of instruction per week, respectively. Credit for this course cannot be applied toward a degree.

EAP 6000. Academic Communication. 3 Credits.

Acclimation to the communicative expectations of graduate school through developing listening and note-taking skills, expanding communicative vocabulary, leading and participating in class discussions, and preparing and delivering informal and formal presentations. Credit does not apply to any degree or certificate offered by GW. (Fall, spring, and summer).

EAP 6110. Academic Writing and Research for International Graduate Students I. 3 Credits.

The research/planning/writing/revising process. Practice in reading/analyzing university-level materials and completing graduate-level academic tasks with a focus on key writing skills. Credit for this course does not apply toward any degree or certificate offered by GW. (Fall, spring, and summer).

EAP 6111. Academic Writing and Research for International Graduate Students II. 3 Credits.

An academic writing and research course for students who demonstrate high proficiency in English. Focus on research paper writing, small-group work, and oral presentations on research. Credit for this course does not apply toward any degree or certificate offered by GW. (Fall, spring, and summer).

ENVIRONMENTAL RESOURCE POLICY (ENRP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ENRP 6085. Topics in Env Resource Policy. 1-3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit, provided the topic differs.

ENRP 6101. Environmental Sciences I. 3 Credits.

Survey of the basic sciences crucial to environmental issues. Topics related to the lithosphere, hydrosphere, atmosphere, and biosphere. For degree candidates in the program; others may enroll with permission of the instructor.

ENRP 6102. Environmental Sciences II. 3 Credits.

Continuation of ENRP 6101. Survey of the basic sciences crucial to environmental issues. Topics related to the lithosphere, hydrosphere, atmosphere, and biosphere. For degree candidates in the program; others may enroll with permission of the instructor.

ENRP 6140. Environmental Impact Statement Procedures and Environmental Law. 3 Credits.

The rationale for environmental impact statements from the viewpoint of the nature and origins of environmental concerns. Government agencies responsible for environmental impact statements; current statutes and regulations pertaining to the environment.

ENRP 6145. Global Environmental Justice and Policy. 3 Credits.

Environmental justice, considered as both a movement and a public policy. Examination of environmental injustices—both perceived and actual—affecting individuals, communities, and populations. Adherence to, and enforcement of, environmental laws and regulations that affect the allocation of environmental benefits and the distribution of sources of toxic pollution and other hazards.

ENRP 6295. Research Topics in Environmental Resource Policy. 1-3 Credits.

May be repeated for credit to a maximum of 6 credits. (Fall, spring, and summer).

ENRP 6298. Seminar in Environmental Resource Policy. 3 Credits.

The capstone seminar involves team development of a project sponsored by an external entity, such as a government agency or non-governmental organization, or participation in an aspect of a research project directed by a faculty member. The student team functions as an external consultant tasked with analysis of the chosen issue.

EPIDEMIOLOGY (EPID)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EPID 6295. Reading and Research. 1-12 Credits.

May be repeated for credit.

EPID 6998. Thesis Research. 3 Credits.

EPID 6999. Thesis Research. 3 Credits.

EPID 8998. Advanced Reading and Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

EPID 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

EXERCISE SCIENCE (EXSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EXSC 1101. Experimental Course. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

EXSC 1103. Professional Foundations in Exercise Science. 3 Credits.

Nature, scope, and scientific basis of exercise science: orientation to professional competencies and opportunities.

EXSC 1110. Applied Anatomy Physiology I-II. 0-4 Credits.

Fundamentals of human anatomy and physiology for students preparing for health sciences professions. Emphasis on bones, joints, muscles, innervation, and blood supply. Laboratory fee.

EXSC 1111. Applied Anatomy Physiology I-II. 0-4 Credits.

Continuation of EXSC 1110. Fundamentals of human anatomy and physiology for students preparing for health sciences professions. Emphasis on bones, joints, muscles, innervation, and blood supply. Laboratory fee. EXSC 1110 is prerequisite to EXSC 1111.

EXSC 1112. Current Issues in Coaching. 3 Credits.

Trends and issues in athletics, sport, and coaching. Concepts from both theoretical and applied perspectives.

EXSC 1114. Community Nutrition. 3 Credits.

Introduction to community nutrition and public health programs offered on the local, state, national, and international levels, targeting both individuals and groups. Topics include nutrition assessment, health policies, nutrition programs, and principles of nutrition education.

EXSC 1117. Principles of Coaching. 3 Credits.

Study of coach/athlete behavioral patterns and interactions, coaching methods, and interdisciplinary principles applicable to coaching.

EXSC 1118. Sport and Nutrition. 3 Credits.

The nutrition needs for recreational exercise and sports; skills in assessing nutrition needs; development of individual nutrition programs that are sport/activity-specific; and identification and correction of nutrition problems affecting sports performance. Prerequisite: HLWL 1116 or EXSC 2119.

EXSC 1119W. Children and Sport. 3 Credits.

Psychomotor, psychosocial, and physiological factors of children's participation in sports. The importance of sport to children, readiness to compete, adaptations to training, participation motives, social factors, fundamentals of training, nutrition, stress, and child protection. Theoretical aspects applied in a variety of sports settings.

EXSC 1180. Topics in Exercise Science. 1-3 Credits.

EXSC 2110. Prevntn & Care of Injury. 0-4 Credits.

Information and practical experience in preventing, recognizing, and treating injuries that occur in physically active individuals. Prerequisite: EXSC 1110- EXSC 1111 .

EXSC 2111. Exercise Physiology I. 4 Credits.

The physiological functions of the body and the effect of exercise on these functions. Prerequisite: EXSC 1110- EXSC 1111. Laboratory fee.

EXSC 2112. Exercise Physiology II. 0-4 Credits.

How the physiological systems of the body respond to acute and chronic exercise; neuromuscular adaptations to exercise. Exercise training program design, training in extreme environmental conditions, and training considerations for special populations. Prerequisite: EXSC 2111. Laboratory fee.

EXSC 2113. Kinesiology. 0-4 Credits.

Analysis of human movement with emphasis on the biomechanics of exercise and sport movement patterns. Prerequisite: EXSC 1110- EXSC 1111 , an approved course in anatomy.

EXSC 2114. Nutrition Sciences I. 3 Credits.

How the macronutrients (fat, carbohydrate, and protein) are digested, absorbed, and metabolized. Other topics include alcohol metabolism, weight management, body composition, and macronutrient metabolism in exercise. Prerequisite: BISC 1111- BISC 1112, EXSC 1110- EXSC 1111.

EXSC 2115. Nutrition Sciences II. 3 Credits.

How the micronutrients (vitamins and minerals) are digested, absorbed, and metabolized. Other topics include hydration, the role of phytochemicals in the diet, and the effect of exercise on micronutrient requirements. Prerequisite: EXSC 2114.

EXSC 2116. Exercise and Health Psychology. 3 Credits.

The relation of behavioral factors to health and disease. The role of physical activity in the prevention of chronic disease and disability. Health behavior theories and cognitive behavioral approaches to health behavior change.

EXSC 2117. Sport Psychology. 3 Credits.

Study of psychological aspects of sport participants, athletes, teams, and competition in sport situations, including personality, motivation, performance level, achievement, and behavioral change strategies; social factors, training events, and measurement techniques. Prerequisite: PSYC 1001. (Fall and spring).

EXSC 2117W. Sport Psychology. 3 Credits.

Study of psychological aspects of sport participants, athletes, teams, and competition in sport situations, including personality, motivation, performance level, achievement, and behavioral change strategies; social factors, training events, and measurement techniques. Prerequisite: PSYC 1001.

EXSC 2119. Basic Nutrition. 3 Credits.

The six classes of nutrients, their chemical basis, their physiological functions, and their conversion into usable energy. Nutrient needs across the lifespan. Prerequisite: BISC 1005 or BISC 1112 or CHEM 1005 or CHEM 1111.

EXSC 2121. Orthopaedic Taping and Bracing. 1 Credit.

Laboratory complement to ExSc 2110; required for athletic training majors. Laboratory fee.

EXSC 2122. Food Systems in Public Health. 3 Credits.

The current state of the global food system from farm to fork; analysis of the impacts on health and issues of sustainability within the context of global food systems. (Fall and spring).

EXSC 3101. Independent Study. 3 Credits.

For departmental majors only. Prerequisite: outline of intended project must be approved prior to registration by instructor and dean's office.

EXSC 3102. Applied Sport Psychology. 3 Credits.

Current research, theoretical perspectives, and practical aspects. The nature of peak mental performance and a range of psychological skills. Practical methods of applying mental skills training and assessing psychological skills in sports settings. Approaches to applying and developing mental skills programs for athletes. Professional and ethical issues. Prerequisite: EXSC 2117.

EXSC 3110. Internship. 1-9 Credits.

For departmental majors. Admission by permission of advisor. Prerequisite: EXSC 2112.

EXSC 3117. Injury Assessment. 4 Credits.

Information and practical experience in the evaluation and assessment of orthopedic and other injuries. Prerequisite: EXSC 2110. Laboratory fee.

EXSC 3118. Therapeutic Modalities in Sports Medicine. 4 Credits.

Explanation and demonstration of the use of therapeutic modalities on the healing process, including discussion of the use of therapeutic modalities to enhance the rehabilitation process after athletic injury. Prerequisite: EXSC 3117 or permission of instructor. Laboratory fee.

EXSC 3119. Therapeutic Exercise in Sports Medicine. 4 Credits.

Discussion and application of general rehabilitation techniques to specific athletic injuries, including evaluation, implementation, and follow-up after specific joint injuries. Prerequisite: EXSC 3117 or permission of instructor.

EXSC 3121. Medical Issues in Sports Med. 3 Credits.

For athletic training majors only. General medical issues and pharmacology as they relate to the profession of athletic training. Laboratory fee.

EXSC 3123W. Psych of Injury & Performance. 3 Credits.**EXSC 3125. Athletic Training Practicum. 3 Credits.**

For athletic training/sports medicine students only. Practical clinical experience and application of athletic training skills. Laboratory fee. (Fall and spring).

EXSC 3140. Sport and the Law. 3 Credits.

Basic principles of the law as it applies to amateur and professional sports. Legal issues and their ramifications. (Fall, spring, and summer).

EXSC 4110. Current Issues in Exercise Science. 3 Credits.

Study of current literature with implications for exercise science specializations; use of library resources and retrieval systems; evaluation of professional competencies. For senior exercise science and athletic training majors only.

EXSC 6202. Adv Exercise Physiology I. 0-3 Credits.

Examines the acute and chronic cardiovascular and pulmonary adaptations to exercise training. Special attention is given to the mechanisms that affect oxygen delivery and utilization during aerobic exercise. The responses to exercise in extreme environmental conditions are also explored. Topics are addressed in both lecture and laboratory experiences. Register separately for lab. Lab fee \$40. Fall.

EXSC 6203. Adv Exercise Physiology II. 0-3 Credits.

Examines the metabolic and neuromuscular adaptations that occur in response to acute and chronic exercise. Special attention is given to the biochemical pathways responsible for energy production during rest and exercise, and how these pathways adapt with chronic training. The neural, hormonal, and nutritional factors that influence exercise performance are also extensively explored. Topics are addressed in both lecture and laboratory experiences. Register separately for lab. Lab fee \$40. Prerequisites: EXSC 6202 or permission of instructor. Spring.

EXSC 6204. Biostatistical Meth&Res Design. 3 Credits.

Covers the basic principles, concepts, and procedures of research, sampling, and statistical design. Includes probability, hypothesis testing as well as how to apply basic statistical techniques using statistical software and calculators. Prerequisite: Basic Statistics or calculus. Fall.

EXSC 6205. Principles of Epidemiology. 2 Credits.

An introduction to the discipline of epidemiology and its application to health issues and practices. Emphasis is placed on basic concepts, measures of disease frequency, data sources, study designs, results and interpretations, public health screening, infectious disease, chronic disease, nutritional, and physical activity epidemiology. Fall.

EXSC 6207. Psych Aspects Sport & Exercise. 3 Credits.

Focus on selected psychological and social psychological factors related to the physical activity experience. Students will explore the ways in which various psychological components influence behavior and the manner in which these resulting behaviors might be addressed in a variety of situations. Spring.

EXSC 6208. PhysActivity:Phys&Epidemiol. 2 Credits.

Examines the etiologic link between physical activity and current life-style related risk factors and diseases. Prerequisites: EXSC 2111. Spring, Summer.

EXSC 6209. Adv Concepts Nutrition Science. 3 Credits.

Opportunity to research and discuss health and performance-related topics in nutrition. Explore how diet composition and supplement ingestion impacts performance and health. Special emphasis placed on planning diets and using scientific literature to support personal recommendations. Prerequisite: EXSC 2119 or equivalent basic nutrition course.

EXSC 6210. Cardiac Rehabilitation. 3 Credits.

Applied physiology of exercise and psychological stress in relation to coronary artery disease and myocardial infarction; the principles and practice of rehabilitation of patients recovering from a coronary event by exercise therapy and risk factor reduction. Prerequisite EXSC 2111 or equivalent. Fall.

EXSC 6211. Assessment Prescription & ECG. 3 Credits.

Provides the student with information, techniques, and laboratory experiences related to blood pressure determinations, clinical exercise testing, other selected clinical assessments, basic medications for cardiovascular disease, and fundamentals of the electrocardiogram. Prerequisites: EXSC 6210 or permission.

EXSC 6212. EX in Selected ChronicDiseases. 3 Credits.

This course is designed to explore the basic pathophysiology of selected lifestyle chronic diseases (e.g., type 2 diabetes, cardiovascular disease, and cancer). The course will define the role of exercise in the prevention and treatment of chronic disease across the lifespan (i.e., prenatal to successful aging). Spring.

EXSC 6213. Clinical Internship I. 3 Credits.

Provides students with the opportunity to directly work with patients and apply knowledge and skills acquired from coursework in the clinical environment. Internships take place at pre-approved clinical sites usually in the Washington, DC metropolitan area and students are supervised by an on-site Clinical Instructor. Student performance at the internship site will be evaluated by the on-site Clinical Instructor using a standardized format. Prerequisite EXSC 2111, 6210, 6211, 6212, Approval of Academic Advisor.

EXSC 6214. Clinical Internship II. 3 Credits.**EXSC 6215. Clinical Exer Physio Rotations. 3 Credits.**

Provides supervised clinical experiences at affiliated hospitals for students in the Clinical Exercise Physiology Program. Students observe and participate in the assessment, treatment and education of patients with a variety of chronic diseases. Fall.

EXSC 6216. Org&Mgmt of Clinical Programs. 1 Credit.

Administrative organization of clinical programs using cardiac rehabilitation as program model. Budgeting, employee relations, equipment, program supplies, program forms, medicare regulations, billing coding, informed consent, and safety issues all included. Prerequisites: EXSC 6210, 6211, 6212, 6213.

EXSC 6220. Power Training for Sports Perf. 2 Credits.

Understanding and application of power training methods. Prerequisite: EXSC 2111 or Equivalent. \$50 lab fee. Fall.

EXSC 6221. Science & Theory of Training. 3 Credits.

Examination of human physiological adaptations to resistance training with neuromuscular system as primary focus. Prerequisite/co-requisite: EXSC 2111 or Equivalent. Spring.

EXSC 6222. Current Topics in SC. 1-2 Credits.

Current scientific findings related to the field of strength and conditioning. Examine how resistance training programs affect athletic performance in terms of increased strength, power, endurance and resistance to injury. Health benefits of resistance training in non-athletic populations will also be explored. Prerequisite/co-requisite: EXSC 6202. Spring.

EXSC 6223. Biomechanical Analysis. 3 Credits.

Application of mechanical analysis techniques to the human body in motion. Prerequisite: EXSC 2113 or Equivalent. Spring.

EXSC 6231. Advanced Seminar. 1-3 Credits.

Topic to be announced in Schedule of Classes. May be repeated for credit with advisor's approval.

EXSC 6232. Independent Study. 1-3 Credits.

For MS degree candidates enrolled in the department. Designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Permission of instructor/advisor required. Summer, Fall, Spring.

EXSC 6233. Graduate Internship. 1-6 Credits.

For MS degree candidates enrolled in the department. Fieldwork, internship, and/or instructional practice, including conference and/or seminar. May be repeated for credit to a maximum of 6 credits with permission of advisor.

EXSC 6242. Nutrition Across the Lifespan. 2 Credits.

This course provides an overview of the science of nutrition as it relates to health throughout the human life cycle. We will explore how human metabolic processes and nutrient needs change throughout the aging process. We will also learn about several nutrition-related disorders that may occur during the life cycle.

EXSC 6261. Thesis Seminar. 3 Credits.

Required for those students planning to write a thesis and will culminate in the development of a research protocol. The course will cover the principles, concepts, and procedures of research design, including how to interpret the scientific literature, how to design a statistical plan and apply basic statistical techniques, and how to communicate scientific findings both professionally and to the general public.

EXSC 6299. Topics. 1-3 Credits.

Topic to be announced in the Schedule of Classes.

EXSC 6301. Phys. Activity&Children's Lrng. 3 Credits.**EXSC 6302. Classroom-Based PA. 4 Credits.****EXSC 6303. Implement Active Living Class. 5 Credits.****EXSC 6998. Thesis Research. 3 Credits.**

Students work independently to conduct research under the oversight of a faculty research committee. Limited to MS degree candidates in Exercise Science. Fall, Spring, Summer.

FILM STUDIES (FILM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FILM 2151. Film Theory. 3 Credits.

A reading-intensive immersion in classical film aesthetics and a survey of the theoretical and critical canon of cinema literature. Laboratory fee. (Fall).

FILM 2152. Genres of Film. 3 Credits.

An exploration of the relationship between cinematic structure and narrative content in various types of film. Laboratory fee. (Spring).

FILM 2153. History of World Cinema I. 3 Credits.

A two-semester sequence covering 100 years of international cinematic history from an aesthetic and political point of view. Laboratory fee.

FILM 2154. History of World Cinema II. 3 Credits.

Continuation of FILM 2153. A two-semester sequence covering 100 years of international cinematic history from an aesthetic and political point of view. Laboratory fee.

FILM 2155. Screen Writing. 3 Credits.

Introduction to the art and craft of screenwriting—concept, genre, character, structure, dialogue, scene/sequence construction, and, ultimately, the preparation of scripts and treatments for a variety of screen formats.

FILM 2156. Advanced Screenwriting. 3 Credits.

Advanced phases of screenwriting culminating in the preparation of a full-length screenplay, with contextual study of contemporary, international, and classical films toward a fuller appreciation of movies as a cultural whole.

FILM 3390. Screen Writing. 3 Credits.

FINANCE (FINA)

Explanation of Course Numbers

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FINA 3001. Intermediate Finance. 3 Credits.

Theory and practice of acquiring and using funds. Simulations of business decisions by cases and/or models to assess the risk/return interaction of investment, financing, and dividend decisions. Prerequisite: BADM 3501.

FINA 3101. Investment and Portfolio Management. 3 Credits.

Theory and principles of security analysis and portfolio management, including analysis of the national economy, industry, company, and security markets. Risk-reward and computer-aided analysis. Prerequisite: BADM 3501.

FINA 3201W. Exploring Finance w/Simulation. 3 Credits.

Corporate financial analysis as explored through the FINGAME financial simulation software. Focus on intertemporal decision making for capital budgeting and financing of a simulated firm.

FINA 3301. Money and Capital Markets. 3 Credits.

The process of capital formation in a free enterprise economy, with special emphasis on factors affecting the level and structure of interest rates. Money market, capital market, and derivative contracts (futures and swaps) are evaluated from both investment and financing perspectives. Prerequisite: BADM 3501.

FINA 4001. Advanced Financial Management. 3 Credits.

Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. Prerequisite or concurrent registration: BADM 3501 and FINA 3301 or FINA 3001.

FINA 4001W. Advanced Financial Management. 3 Credits.

Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. Prerequisite or concurrent registration: BADM 3501 and FINA 3301 or FINA 3001.

FINA 4101. Applied Financial Securities Analysis. 3 Credits.

Practical security analysis techniques and investing approaches employed by professional investment managers. Prerequisite: BADM 3501.

FINA 4121W. Exploring Finance w/Simulation. 3 Credits.

FINA 4201. Real Estate Investment. 3 Credits.

Principles of real estate investment, including valuation, appraisal, financing, and development, in addition to a discussion of the mortgage market and its institutions. Prerequisite: BADM 3501.

FINA 4900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Prerequisite: BADM 3501.

FINA 4900W. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods.

FINA 4995. Independent Study. 1-15 Credits.

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: BADM 3501.

FINA 6220. Business Financial Management. 3 Credits.

FINA 6221. Financial Decision Making. 3 Credits.

Theory and practice of business finance, emphasizing the impacts of long- and short-term uses and sources of funds on the firm's market value. Prerequisite: MBAD 6234.

FINA 6222. Capital Formation. 3 Credits.

Determinants of saving and investment and resultant funds flow are evaluated. Special emphasis on the level and risk structure and term structure of interest rates. The role and management of financial institutions is stressed. Prerequisite: MBAD 6234.

FINA 6223. Investment Analysis and Portfolio Management. 3 Credits.

Risk-reward analysis of security investments, including analysis of national economy, industry, company, and market; introduction to portfolio management; emphasis on theory and computer methods. Prerequisite: MBAD 6234.

FINA 6224. Financial Management. 3 Credits.

Advanced case studies in domestic and international financial management; working capital policy, capital budgeting, financing with debt and equity, dividend policy, valuation, project finance, venture capital, and mergers and acquisitions. Prerequisite: MBAD 6234.

FINA 6230. Urban Development Economics. 3 Credits.

FINA 6231. Sem:Investment & Portfolio Mgt. 3 Credits.

FINA 6234. New Venture Financing: Due Diligence and Valuation Issues. 3 Credits.

Fundamentals and practice of due diligence and screening of early-stage investment opportunities. Same as MGT 6293. Prerequisite: MBAD 6234.

FINA 6235. Futures Markets: Trading and Hedging. 3 Credits.

Organization and regulation of futures markets. Alternative strategies for trading of futures contracts for possible hedging uses. High risk-high return investment alternatives. The use of futures markets to manage risks. Prerequisite: MBAD 6234. Recommended: FINA 6221.

FINA 6236. Options. 3 Credits.

Pricing of options on financial instruments. Role of options in risk management, trading strategies, hedging implications for national and international investors, financial engineering, and structure and regulation of option markets. Prerequisite: MBAD 6234. Recommended: FINA 6221.

FINA 6237. Private Wealth Management/Personal Financial Advising. 3 Credits.

For students preparing to be personal financial advisors; the combination of taxes, pensions, investing, budgets, estates and trusts, and insurance into comprehensive personal financial plans. Regulation, professional ethics, and the economics of advisory firms. Extensive use of computer spreadsheets and case studies. Prerequisite: MBAD 6234. Recommended: ACCY 6401. For students preparing to be private wealth managers/personal financial advisors; the combination of taxes, pensions, investing, budgets, estates and trusts, and insurance into comprehensive personal financial plans. Regulation, professional ethics, and the economics of advisory firms. Extensive use of computer spreadsheets and case studies. Prerequisite: FINA 6223; ACCY 6401 is recommended. (Spring).

FINA 6238. Financial Engineering. 3 Credits.

Valuation and risk management theory for bonds, forward contracts, swaps, options, exotic options, and interest rate options. Development of financial software, including Monte Carlo simulation modeling. Case studies of innovative solutions to investment, corporate finance, and financial institution management problems. Prerequisite: MBAD 6234.

FINA 6239. Applied Portfolio Management. 3 Credits.

Synthesis of the theoretical concepts of securities analysis and portfolio management with the application of analyzing securities and building an actual portfolio. Prerequisite: MBAD 6234 and permission of instructor.

FINA 6240. Real Estate Development. 3 Credits.

Examination of the forces that shape real estate development; market analysis methods and techniques to evaluate project feasibility; the institutional and legal framework within which real estate development occurs and that influences controls, land value, and development potential. Prerequisite: MBAD 6234.

FINA 6241. Financing Real Estate. 3 Credits.

Principles of real estate finance; evaluating different methods of financing real estate; sources of real estate funding with emphasis on securitization. Incentives provided by governments. Prerequisites: MBAD 6234. (Fall and spring).

FINA 6242. Real Estate Valuation and Investment. 3 Credits.

Applications of market analysis, valuation, and financial techniques for the real estate appraisal and investment process. Prerequisite: MBAD 6234. Applications of market analysis, valuation, and financial techniques for the real estate development process.

FINA 6245. Land Development Law. 3 Credits.

FINA 6247. Urban Development Economics. 3 Credits.

FINA 6248. Real Estate Development Cases. 3 Credits.

Case study analysis of large-scale commercial real estate developments to gain comprehension of financial, political, legal, and technical complexities and constraints inherent in the real estate development process. Prerequisite: FINA 6221 or permission of instructor.

FINA 6271. Financial Modeling and Econometrics. 4 Credits.

Applied statistical and econometric analysis and modeling in finance. Methodologies include descriptive and inferential statistics, multivariate regression, and time series analysis. Empirical studies are reviewed, and a series of research projects are undertaken. Prerequisites: Master of Science in Finance degree candidacy. (Fall).

FINA 6272. Global Financial Markets. 4 Credits.

Theories explaining domestic and international interest rate and exchange rate structures. Roles of financial institutions and markets are investigated and forecasting methodologies are applied. Prerequisites: Master of Science in Finance degree candidacy. (Summer).

FINA 6273. Cases in Financial Management and Investment Banking. 4 Credits.

Computer modeling for analysis and forecasting of a firm's financial statements to reflect possible future performance. Application and integration of financial accounting and financial analysis, using a different case study each week. Financial issues faced by companies and their commercial and investment bankers as tactical and strategic decisions are made about organic growth, growth through merger and acquisition, and corporate reorganization. Prerequisites: Master of Science in Finance degree candidacy. (Fall).

FINA 6274. Corporate Financial Management and Modeling. 4 Credits.

Causal connections between decisions made by business firms, their expected performance, and the resulting current valuation of the firm's common stock. Factors affecting the level and structure of interest rates, which are incorporated by many financial models, theories, and decisions. Prerequisites: Master of Science in Finance degree candidacy. (Fall).

FINA 6275. Investment Analysis and Global Portfolio Management. 4 Credits.

Financial markets and instruments viewed from the investor's perspective. Analysis of the value of equity and fixed-income securities and the construction of efficient portfolios in a global financial market. Issues of market efficiency, tax structures, and investment funds; computer-based models. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6276. Financial Engineering and Derivative Securities. 4 Credits.

Mathematical and theoretical foundations to value-derivative securities, including options, futures, and swaps; hedging and trading applications of these contracts. Arbitrage trading across cash and derivative markets and its role in maintaining equilibrium prices. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6277. Comparative Financial Market Regulation and Development. 4 Credits.

Theory and current status of comparative regulation of domestic and international financial institutions and markets. Effects on country economic development and international trade. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6278. Financial Theory and Research. 4 Credits.

Theoretical constructs of business investment and financing decisions and of financial asset pricing structures in domestic and international environments. Analytical and numerical models are developed, and empirical studies are evaluated. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6279. Real Estate Finance and Fixed-Income Security Valuation. 4 Credits.

Application of financial theory to real estate investment: the housing market, mortgage valuation and securitization, commercial properties, CMBS, and REITs. Fixed-income security valuation with focus on theory and data applications on interest rate movements, fixed-income security and derivative pricing, and credit risk. Prerequisites: Master of Science in Finance degree candidacy. (Spring).

FINA 6280. Financial Institution Management and Modeling. 4 Credits.

Analysis of the financial performance and condition of a bank, toward understanding of the financial environment in which banks operate and regulation of the banking system. Application of asset/liability management principles and statistical and mathematical models employed in bank risk management. Prerequisites: Master of Science in Finance degree candidacy. (Fall).

FINA 6281. Cases in Financial Modeling and Engineering. 4 Credits.

The modeling of complex financial instruments and techniques used in market and credit risk management. Underlying mathematics and theoretical constructs; modeling exercises; and implementation of models. Examples may be drawn from corporate finance, corporate and investment banking, asset management, or other activities. Prerequisites: Master of Science in Finance degree candidacy. (Summer).

FINA 6282. Advanced Financial Econometrics and Modeling. 0-4 Credits.

Testing of several types of applied financial econometric models typically used in practice. Advanced quantitative techniques applied to aspects of financial markets, the behavior of agents, and market and credit risk management. Various software packages used to implement and program models. Prerequisites: Master of Science in Finance degree candidacy. (Summer).

FINA 6290. Special Topics. 0-3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

FINA 6297. International Management Experience. 3 Credits.

Same as IBUS 6297/ MGT 6297/ MKTG 6297/ SMPP 6297. May be repeated for credit.

FINA 6298. Directed Readings and Research. 2-4 Credits.

FINA 6299. Thesis Seminar. 3 Credits.

FINA 6999. Thesis Research. 3 Credits.

FINA 8311. Seminar: Public/Private Sector Institutions and Relationships. 3 Credits.

An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311.

FINA 8321. Seminar: Financial Markets Research. 3 Credits.

Market efficiency, utility testing, the capital asset pricing model, the arbitrage pricing theory, the option pricing model, and aggregate market volatility.

FINA 8322. Seminar: Corporate Finance Research. 3 Credits.

Capital budgeting, capital structure issues, dividend policy, microeconomic foundations, mergers, and agency theory.

FINA 8323. Seminar: Continuous-Time Finance. 3 Credits.

Review of the stochastic calculus methods needed for continuous-time pricing models. The most important continuous-time models, including pricing of derivative securities, consumption-portfolio selection models, continuous-time capital asset pricing models, consumption-based capital asset pricing models, continuous-time arbitrage pricing theory, and different yield curve models.

FINA 8324. Seminar: Financial Markets and Institutions. 3 Credits.

Multi-period asset pricing, term structure of interest rates, market imperfections and institutional factors, auctions, manipulation, derivative markets, market microstructure, and financial institutions.

FINA 8397. Doctoral Seminar. 1-3 Credits.

FINA 8998. Advanced Reading and Research. 1-12 Credits.

Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

FINA 8999. Dissertation Research. 1-12 Credits.

Limited to doctoral candidates. May be repeated for credit.

FINE ARTS (FA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FA 1000. Dean's Seminar. 3 Credits.

FA 1001. Summer Art History. 2 Credits.

FA 1014. Handbuilt Ceramics. 3 Credits.

Working with clay as an art form. Pinch, coil, slab, hump and press mold, paddling, and hollowing techniques. Sketch studies, clay and glaze making, reduction and oxidation kiln firings.

FA 1015. Wheelthrown Ceramics. 3 Credits.

Development of cylindrical and open forms. Sketch studies, trimming, clay and glaze making, reduction and oxidation kiln firings.

FA 1017. Sculpture I. 3 Credits.

Beginning study of design and fabrication of sculpture. Basic sculptural techniques for various media, including clay, plaster, stone, and wood.

FA 1018. Sculpture II. 3 Credits.

Continuation of FA 1017. Beginning study of design and fabrication of sculpture. Basic sculptural techniques for various media, including clay, plaster, stone, and wood.

FA 1021. Drawing I. 3 Credits.

Development of a fundamental understanding of line, shape, value, contrast, composition, and mark making. Emphasis on working directly from life, along with a variety of conceptual issues. Consideration of traditional and contemporary strategies and skills toward development of technique, process, and meaning.

FA 1022. Drawing II. 3 Credits.

Continuation of FA 1021. Development of a fundamental understanding of line, shape, value, contrast, composition, and mark making. Emphasis on working directly from life, along with a variety of conceptual issues. Consideration of traditional and contemporary strategies and skills toward development of technique, process, and meaning. FA 1021 is prerequisite to FA 1022.

FA 1026. Painting: Visual Thinking. 3 Credits.

Development of technical and perceptual skills that are the foundation of visual expression. Beginning projects start with a simple introduction to the mechanics of paint handling: how to begin a painting, apply paint, and model form. Value, line, color, and abstraction.

FA 1028. Painting: Watercolor. 3 Credits.

Working with basic issues of light, color, and paint quality, students learn a variety of techniques, including working transparently, wet-on-wet, wet-on-dry, lifting, masking, and drybrush. Exploration of the medium's inherent qualities as well as those it shares with other painting media.

FA 1041. Black & White Photography. 3 Credits.

Introduction to the materials and processes of black-and-white photography. Camera operations, film processing, printing, and presentation methods. Gaining technical skills. Issues concerned with the visual language of photography.

FA 1042. Color Photography. 3 Credits.

Introduction to the materials and processes of color photography. Color theory, exposure techniques, film scanning, digital color correcting, and printing. The use of color as a means of visual communication and creative expression.

FA 1071. New Media: Digital Art. 3 Credits.

A survey of the computer as a creative art tool. Topics covered include bit-mapped and vector graphics, digital sound and imaging, basic time-based media, and digital text, integrated with fundamental design principles of concept development, composition, color theory and presentation.

FA 1075. East Asian Calligraphy. 3 Credits.

Writing of Chinese characters with traditional writing implements. No knowledge of the language required. Covers the history, aesthetics, and philosophy of East Asian scripts and calligraphy and their relationships to paintings, seal carving, and literature. Same as EALL 1075.

FA 2125. Ceramics: Wheelthrown Functional Forms. 3 Credits.

Aesthetic and technical development of wheelthrown ceramic forms. Exploration of attachments: lids, spouts, handles, and footing devices. Sketches and technical drawings, clay and glaze-making tests, varied temperature firings in reduction and oxidation atmospheres. Prerequisite FA 1015.

FA 2127. Ceramic Design in Handbuilding. 3 Credits.

Handbuilding techniques of pinch, coil, slab, hump and press mold, paddling, and hollowing. Sketch studies, clay and glaze tests. Orientation to studio operations and maintenance.

FA 2131. Ceramic Sculpture. 3 Credits.

Developing an understanding of the sculptural ceramic form that integrates both quality and creativity. Techniques in hollow and solid construction. Varied temperature firings in reduction and oxidation atmospheres.

FA 2139. Special Topics: Ceramics. 3 Credits.

Prerequisite: FA 1014 or FA 1015 or permission of instructor.

FA 2140. Sculpture III. 3 Credits.

Advanced techniques in a variety of media. Prerequisite: FA 1017 or FA 1018.

FA 2149. Special Topics: Sculpture. 3 Credits.

Prerequisite: FA 1017 or FA 1018 or permission of instructor.

FA 2150. Drawing III. 3 Credits.

Advanced investigation of drawing as an organizing tool for thought, analysis, and personal imagery. Traditional and contemporary approaches to topics related to perceptual and conceptual concerns. Prerequisite: FA 1022.

FA 2151. Advanced Drawing Techniques. 3 Credits.

Investigation of the common concerns and creative processes that have dissolved boundaries between drawing and painting in the late 20th century. Prerequisite: FA 2150.

FA 2159. Special Topics: Drawing. 3 Credits.

Prerequisite: FA 1021 or FA 1022 or permission of instructor.

FA 2160. Figure Painting: Observation and Gesture. 3 Credits.

Consideration of the process of vision as mediated through manipulation of paint to form an image. Development of solutions to clarity, articulation, energy, and finish. Prerequisite: FA 1026 or FA 1027.

FA 2161. Problems in Color. 3 Credits.

Exploration of the objective rationale and subjective experience of color through the execution of problems in color contrast and color scales. Prerequisite: FA 1026 or FA 1027.

FA 2162. Painting: Contemporary Issues. 3 Credits.

Examples from contemporary art serve as starting points for discussion of the creative process. Postmodern strategies to rethink and challenge various hierarchies of subject, style and medium. Prerequisite: FA 1026 or FA 1027.

FA 2169. Special Topics: Painting. 3 Credits.

Prerequisite: FA 1026 or FA 1027 or permission of instructor.

FA 2170. Advanced Photography: Exposure and Printing Techniques. 3 Credits.

Pre-visualization, accurate exposure and development, and the craft of black-and-white printmaking. Techniques and strategies for creation of a portfolio that is aesthetically and conceptually engaging. Prerequisite: FA 1041.

FA 2171. Advanced Photography: Digital Color Printing. 3 Credits.

Further development of color theory and the technical skills to make high-quality inkjet prints. Critiques and discussion of contemporary artistic practice. Prerequisite: FA 1042.

FA 2172. Photography: Contemporary Issues. 3 Credits.

Emphasis on the incorporation of contemporary strategies, trends, and approaches into the student's personal practice. The work of contemporary artists who use photography will inform the work produced. Prerequisite: FA 1041 or FA 1042.

FA 2179. Special Topics: Photography. 3 Credits.

Prerequisite: FA 1041 or FA 1042 or permission of instructor.

FA 2180. New Media: Digital Illustration. 3 Credits.

Advanced investigation of two- and three-dimensional drawing and illustration techniques. Print and/or digital portfolio preparation. Prerequisite: FA 1071 or permission of instructor.

FA 2181. New Media: Digital Imaging. 3 Credits.

Advanced examination of bit-mapped imaging techniques. Methods of electronic dissemination of visual information. Prerequisite: FA 1071 or permission of instructor.

FA 2182. New Media: Time-based Visual Expression. 3 Credits.

Contemporary two-dimensional animation, video, and multimedia systems and applications, including individual portfolio projects. Prerequisite: FA 1071 or permission of instructor.

FA 2183. New Media: Digital Printmaking. 3 Credits.

An exploration of digital printmaking techniques, including color profiling. Prerequisite: FA 1071 or permission of instructor.

FA 2184. New Media: Mixed Media. 3 Credits.

Combining digital visualization with traditional mediums, artist bookmaking, collage, assemblage, etc. Prerequisite: FA 1071 or permission of instructor.

FA 2189. Special Topics: New Media. 3 Credits.

Prerequisite: FA 1071 or permission of instructor.

FA 2190. Special Topics: Fine Arts. 3 Credits.**FA 2193. Professional Practices. 3 Credits.**

A wide overview of the contemporary art world, including how artists promote their work to galleries, public art organizations, and museums; writing successful grant proposals, artist statements, essays, and reviews; and comparing the quality of venues for art and art journalism.

FA 4195. Critical Practices. 3 Credits.

This structured independent study consists of weekly group critiques that bring together students working in a variety of media. Discussions, which range from practical to aesthetic issues, challenge students to focus and articulate their visual knowledge. Prerequisite: permission of instructor.

FA 4199. Internship. 3 Credits.

Open only to candidates for the B.A. in fine arts with approval of the advisor in fine arts. May not be repeated for credit toward the degree. May be taken P/NP only.

FA 6231. Ceramic Sculpture. 3 Credits.

Developing an understanding of the sculptural ceramic form that integrates both quality and creativity. Techniques in hollow and solid construction. Varied temperature firings in reduction and oxidation atmospheres.

FA 6233. Architectural Ceramics. 3 Credits.

Advanced studies in ceramic murals and sculptures designed for indoor and outdoor architectural concepts. Laboratory tests and activities.

FA 6239. Special Topics: Ceramics. 3 Credits.**FA 6249. Special Topics: Sculpture. 3 Credits.****FA 6250. Drawing III. 3 Credits.**

Advanced investigation of drawing as an organizing tool for thought, analysis, and personal imagery. Traditional and contemporary approaches to topics related to perceptual and conceptual concerns.

FA 6251. Advanced Drawing Techniques. 3 Credits.

Investigation of the common concerns and creative processes that have dissolved boundaries between drawing and painting in the late 20th century.

FA 6259. Special Topics: Drawing. 3 Credits.**FA 6260. Figure Painting: Observation and Gesture. 3 Credits.**

Consideration of the process of vision as mediated through manipulation of paint to form an image. Development of solutions to clarity, articulation, energy, and finish.

FA 6261. Problems in Color. 3 Credits.

Exploration of the objective rationale and subjective experience of color through the execution of problems in color contrast and color scales.

FA 6262. Painting: Contemporary Issues. 3 Credits.

Examples from contemporary art serve as starting points for discussion of the creative process. Postmodern strategies to rethink and challenge various hierarchies of subject, style and medium.

FA 6269. Special Topics: Painting. 3 Credits.**FA 6270. Advanced Photography: Exposure and Printing Techniques. 3 Credits.**

Pre-visualization, accurate exposure and development, and the craft of black-and-white printmaking. Techniques and strategies for creation of a portfolio that is aesthetically and conceptually engaging.

FA 6271. Advanced Photography: Digital Color Printing. 3 Credits.

Further development of color theory and the technical skills to make high-quality inkjet prints. Critiques and discussion of contemporary artistic practice.

FA 6272. Photography: Contemporary Issues. 3 Credits.

Emphasis on the incorporation of contemporary strategies, trends, and approaches into the student's personal practice. The work of contemporary artists who use photography will inform the work produced.

FA 6279. Special Topics: Photography. 3 Credits.**FA 6280. New Media: Digital Illustration. 3 Credits.**

Advanced investigation of two- and three-dimensional drawing and illustration techniques. Print and/or digital portfolio preparation. Prerequisite: FA 1071 or permission of instructor.

FA 6281. New Media: Digital Imaging. 3 Credits.

Advanced examination of bit-mapped imaging techniques. Methods of electronic dissemination of visual information. Prerequisite: FA 1071 or permission of instructor.

FA 6282. New Media: Time-based Visual Expression. 3 Credits.

An examination of contemporary two-dimensional animation, video, and multimedia systems and applications, including individual portfolio projects. Prerequisite: FA 1071 or permission of instructor.

FA 6283. New Media: Digital Printmaking. 3 Credits.

An exploration of digital printmaking techniques, including color profiling. Prerequisite: FA 1071 or permission of instructor.

FA 6284. New Media: Mixed Media. 3 Credits.

Combining digital visualization with traditional mediums, artist bookmaking, collage, assemblage, etc., are considered. Prerequisite: FA 1071 or permission of instructor.

FA 6289. Special Topics: New Media. 3 Credits.

Prerequisite: FA 1071 or permission of instructor.

FA 6290. Special Topics: Fine Arts. 3 Credits.

May be repeated for credit provided the topic differs. Restricted to graduate students only. (Same as FA 2190) (Fall and spring).

FA 6295. Critical Practices. 3-7 Credits.

This structured independent study consists of weekly group critiques that bring together students working in a variety of media. Discussions, which range from practical to aesthetic issues, challenge students to focus and articulate their visual knowledge.

FA 6298. Internship. 3-6 Credits.

Open only to M.F.A. candidates with the approval of the advisor in fine arts. May be repeated to a maximum of credits.

FA 6998. Thesis Research. 3 Credits.**FA 6999. Thesis Research. 3 Credits.**

FORENSIC PSYCHOLOGY (FORP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FORP 6101. Psychology and the Legal System I. 3 Credits.

Focuses on the paradigm differences in the mental health and legal systems and the challenges associated with integrating the two. Provides the students with an overview of the American legal system and the American mental health system. Discusses various areas of the intersection of the two systems in criminal, civil, juvenile, and family law settings. The role and ethics of the mental health professional in legal settings is addressed. (Fall and spring).

FORP 6102. Psychology and the Legal System II. 3 Credits.

Students will be introduced to basic legal research with an emphasis on developing an ability to read and understand primary legal materials. Legal concepts of criminal competence and legal insanity are discussed. Constitutional notions of due process and fair treatment as they pertain to the mentally ill, developmentally disabled and children are reviewed with an emphasis on their evolution and current trends. The concept of dangerousness as it applies in both criminal civil commitment and sex offender commitment proceedings is reviewed.

Prerequisites: FORP 6101. (Spring and summer).

FORP 6103. Theories of Criminal Behavior. 3 Credits.

Theories of criminal behavior are discussed from the standpoint of psychodynamic theories, theories of cognition, biological and genetic theories, social learning and behavioral theories. Developmental and cultural issues in criminal behavior are reviewed. The interrelationship between these and other more sociological theories is discussed. Specific attention is given to particular areas of concern surrounding violence and aggression, sex offenses and the role of substance abuse in criminal behavior. (Fall and summer).

FORP 6104. Psychopathology. 3 Credits.

This course explores the etiology and classification of mental disorders. Manifestations, symptoms, and basic treatment issues are discussed within the framework of the DSM-5 diagnostic manual. Emphasis is given to those disorders and categories that are a primary focus in forensic settings. (Fall and spring).

FORP 6105. Basics of Psych Assessment. 3 Credits.

This course is designed to provide an introduction to the field of psychological assessment, including familiarizing the student with test design, methodology, psychometrics, and report design. Includes a survey of frequently used objective and projective measures in the areas of cognitive, personality, and emotional functioning and their forensic application. (Fall and spring).

FORP 6106. Ethics in Forensic Psychology. 3 Credits.

Professional, ethical, and legal issues are explored within the context of forensic psychology practice. Expectations for professional and ethical behavior as it relates to forensic psychological services are presented, as defined by the applicable ethical codes (APA, ACA and ABA). Ethical dilemmas or conflicts between psychology and the law are presented and discussed from the vantage points of psychology and the law. (Spring and summer).

FORP 6107. Research and Statistics. 3 Credits.

An overview of research methods, techniques, and implementation. The basic descriptive and inferential statistics in psychology. Emphasis will be given to training the student in the interpretation of published studies and normative data in assessments. Restricted to Forensic Psychology students. (Spring and summer).

FORP 6108. Consultation and Testimony. 3 Credits.

The role of the forensic practitioner will be explored in the context of providing services within the legal system and other related organizations, including evidentiary issues with regard to expert testimony as well as a discussion of techniques for successfully presenting psychological testimony. A practical approach to effective consultation with other disciplines, including attorneys, mental health providers, and criminal justice personnel will be presented. A review of research in the area of jury selection will be discussed. (Fall and summer).

FORP 6109. Evaluation and Treatment of Offenders. 3 Credits.

This course will review approaches to classification of offenders, particularly around concepts of dangerousness and psychopathy, and review treatment approaches in different settings within the criminal justice system. The course will discuss the history of offender treatment and the relative merits of different treatment models commonly used in offender rehabilitation. It will also review ongoing research into new and emerging treatment models. (Fall and spring).

FORP 6110. Forensic Psych Assessment. 3 Credits.

An examination of forensic evaluations, including competency to stand trial, criminal insanity defenses, pre-sentencing and risk of dangerousness evaluations. Communication of assessment results to the courts or other referral sources will be addressed. Students will also develop a theoretical understanding and practical experience selecting and administering specialized forensic assessment instruments. Issues related to the forensic evaluator's role and their legal and ethical responsibilities are included. Prerequisites: FORP 6105. (Summer).

FORP 6111. Evaluation and Treatment of Sex Offenders. 3 Credits.

The focus of this course will be on measures utilized in assessing sex offenders with a focus on predicting dangerousness and recidivism. Theories about the interpersonal and intrapsychic presentations of this type of offender will be examined in such areas as deviant arousal and cognitive distortions. Treatment modalities will be discussed. Legal and ethical difficulties arising from mandatory treatment and long term commitment for dangerous sex offenders will be discussed. (Spring).

FORP 6112. Substance Abuse Evaluation and Treatment. 3 Credits.

This course will examine some underlying ideas of the pathology of addiction including psychodynamic theories, genetic and biological theories and those involving more environmental focus. Current assessment and intervention techniques will be reviewed along with current trends in treatment including psychopharmacological, psychodynamic and cognitive-behavioral approaches. (Summer).

FORP 6113. Victimology. 3 Credits.

The psychology of the victim within social and cultural contexts. Prior victimization as a precursor to criminal behavior. Prevention, intervention, and policy issues. (Fall).

FORP 6114. Issues in Family Law. 3 Credits.

The psycho-legal issues concerning divorce, child custody, guardianship, and intrafamily violence and sex offending. Dispute resolution methods as an alternative to litigation with a particular emphasis on divorce mediation. Child custody evaluation and the evaluation of the elderly. Ethical and legal difficulties in this area will be discussed. (Spring, odd years).

FORP 6115. Children and Adolescents in the Legal System. 3 Credits.

The focus of this course will be on the differences in the treatment of underage offenders from adults in the legal system. The history and role of the juvenile justice system from both legal and mental health perspectives will be reviewed. Developmental aspects of the minor's offending, including status offenses will be discussed as well as the role of the psychologist in court proceedings involving juvenile offenders. Recent trends dealing with ideas of the increasing criminalization of juvenile conduct and the waivers of juveniles to the adult system will be explored. (Spring, odd years).

FORP 6116. Correctional Psychology. 3 Credits.

Provides an overview of the American correctional system. Introduces students to the role of the mental health professional in corrections. Differences between various types of settings such as jails, prisons, halfway houses and parole and probation supervision are discussed. Issues such as the offender's desire to refuse treatment, maintaining patient confidentiality and dual allegiances to the client and the facility are discussed from both a legal and ethical standpoint. Specific differences in pretrial, post conviction and post release supervision are addressed. (Spring, odd years).

FORP 6117. Interrogation and Interviewing. 3 Credits.

The focus of this course is on the techniques of interrogation and interviewing in both criminal and terrorism related investigations. In addition to basic techniques, it will explore cultural aspects of interviewing, the problem of false confessions, and the use of the polygraph. Legal and ethical issues surrounding interrogations, including the use of coercive techniques will be examined. Restricted to Forensic Psychology students. Prerequisites: FORP 6101, FORP 6103, FORP 6104, FORP 6105. (Spring).

FORP 6118. Psychological Profiling. 3 Credits.

The strengths and limitations of psychological profiling in criminal investigations. The main psychological principles upon which criminal profiling is based and crime scene analysis and its relationships to both the demographic and psychological characteristics of a pool of unknown offender suspects. Methods to identify potential serial offenses will be examined. Legal and ethical issues with regard to the use of profiling will be explored. Restricted to Forensic Psychology students. Prerequisites: FORP 6101, FORP 6103, FORP 6104, FORP 6105. (Fall, odd years).

FORP 6119. Police Psychology. 3 Credits.

The focus of this course is on the psychological aspects of working within or for police agencies. Areas to be covered include personality assessment as to suitable candidates for police work, the stress involved in the work with attendant adverse psychological consequences (including aspects of legal liability) and continuing assessment of police officers after critical incidents. Ethical and practical problems for the mental health professional when working within or for a police organization will be discussed as will services available for troubled officers. (Spring, odd years).

FORP 6120. Counterintelligence. 3 Credits.

Counterintelligence considered from the perspectives of intelligence agencies, terrorist groups, and industry. The interconnection of psychological factors, motivations, strategic intent, and defense measures. Current and potential threats are assessed, including cybersecurity and cognition security. Restricted to students enrolled in the forensic psychology program. (Spring).

FORP 6121. Theories of Counseling. 3 Credits.

An introduction to basic counseling and psychotherapeutic theories, from individual, group, and systems perspectives (e.g., Psychodynamic, Existential, Gestalt, Person-Centered, Behavioral, Cognitive, Multicultural Theories). Relevant research is discussed and the application of these theories in a variety of therapeutic settings with an emphasis on forensic populations is explored.

FORP 6122. Counseling Techniques. 3 Credits.

This course provides an integration of counseling methods and strategies, as well as developing the student's practical skills in basic interviewing and counseling. Central topics include the goals of each phase of treatment, development of a therapeutic alliance, and techniques and interventions in short- and long-term treatment with a variety of forensic populations. Prerequisite: FORP 6121.

FORP 6123. Human Development. 3 Credits.

Provides an understanding of the theories of individual and family development and transitions across the life span, as well as theories of personality development and the role of cultural, environmental, and social factors. Course also provides an integration of the interplay between development and other factors to help explain criminal behavior. A survey of counseling strategies for facilitating development over the life span is included.

FORP 6124. Group Therapy. 3 Credits.

Theoretical and experiential understanding of group therapy and group counseling methods and skills with an emphasis on correctional and other forensic populations. Examines the principles of group dynamics, therapeutic factors, member roles and behaviors, leadership styles and approaches, selection criteria, and short- and long-term group process.

FORP 6125. Career Counseling. 3 Credits.

A consideration of theory, practice, and the body of information related to career counseling, choice, and development over the life span. Covers assessment instruments and techniques relevant to career counseling. This course will offer the theoretical foundation and practical experience necessary to understand and support career development needs for diverse individual clients and groups, with an emphasis on the special issues and challenges facing pre-release and recently released offenders.

FORP 6126. Multicultural Counseling. 3 Credits.

Course focuses on developing an understanding of the role of cultural, ethnic, and racial differences in mental health treatment in order to work effectively with diverse individuals and groups. The impact of the therapist's own identity and values is also explored. Emphasis is given to individual, family and group counseling strategies tailored toward diverse populations in a variety of forensic settings.

FORP 6127. Marriage & Family Counseling. 3 Credits.

Principles of work with couples and families, including an overview of systems theories and strategies of family life cycle development. Explores the use of family dynamics and counseling techniques for evaluation and treatment. The usefulness and application of marital and family therapy with forensic populations is also covered. Intervention strategies will address cultural issues and ethical considerations.

FORP 6130. Practicum/Externship. 0-1 Credits.

This one-credit course is comprised of 250 hours of externship training tailored to a student's professional interest and can be completed over multiple semesters. Students should enroll in the one (1) credit option in the semester in which they will complete the required 250 training hours. Students should enroll for zero (0) credits for all other semesters in which they will participate in the externship but not complete all of the required training hours. Prerequisites: FORP 6101, FORP 6103, FORP 6104. (Fall, spring, and summer).

FORP 6140. Practicum - Counseling Internship. 0-3 Credits.

FORENSIC SCIENCES (FORS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FORS 2104. Introduction to Forensic Sciences. 3 Credits.

Topics in the application of science to the criminal justice system, including personal identification, analysis of drugs, forms of trace evidence, identification of biological fluids, forensic pathology, and forensic toxicology. Prerequisites: two semesters of a laboratory science other than astronomy and permission of instructor. (Fall and spring).

FORS 2104W. Intro to the Forensic Sciences. 3 Credits.**FORS 2118. Introduction to Computer Systems for Security Professionals. 3 Credits.**

Aspects of computer systems and software that directly relate to media analysis, i.e., storage, memory, the structure of file systems, and system peripherals that may contain evidence. Laboratory fee.

FORS 2119. Introduction to Network Systems for Security Professionals. 3 Credits.

Aspects of network tools, administrative tools, network protocols, and fundamentals of TCP/IP that can be used to carry out a network-based attack. Development of a working knowledge of how information is processed and can be intercepted on the Internet/Intranet. Laboratory fee.

FORS 2190. Topics in Forensic Science. 3 Credits.

Prerequisite: Any combination of two courses from BISC 1005- BISC 1006 or CHEM 1003- CHEM 1004 and junior standing.

FORS 6201. Forensic Biology. 3 Credits.

Principles of the forensic analysis of blood and other biological materials. Specific procedures and techniques used in forensic biology and serology. Laboratory fee.

FORS 6202. Instrumental Analysis. 3 Credits.

Principles and application of various instrumental methods to the examination of physical evidence, including chromatographic and spectroscopic techniques and mass spectrometry. Laboratory fee.

FORS 6203. Examination of Questioned Documents. 3 Credits.

Theory and principles of handwriting and handprinting, duplicating processes, paper manufacture and fiber analysis; studies of paper and methods of examining questioned documents. Laboratory fee.

FORS 6204. Firearms and Toolmark Identification. 3 Credits.

Methods for identifying firearms, bullet cartridge casings, toolmarks, gunshot residue, obliterated serial numbers, tire marks, and footprints. Laboratory fee.

FORS 6206. Trace Evidence Analysis. 3 Credits.

Principles that govern the analysis of trace evidence, including recovery, transference, interpretation, and comparison. Assessment of evidentiary value, reporting, and court testimony. Laboratory fee.

FORS 6207. Photography in the Forensic Sciences. 3 Credits.

Basic use of forensic photography, including selection and use of equipment, photographs as evidence, close-up work, and common misconceptions. Laboratory fee.

FORS 6213. Elements of Forensic Sciences. 3 Credits.

FORS 6223. Criminal Law III: Moot Court. 3 Credits.

Students prepare and present direct testimony and are cross-examined by an experienced trial attorney in simulated courtroom setting. Class discussions of problems, techniques. Lectures on discovery, admissibility of scientific evidence, chain of custody, use of notes, etc. Prerequisite: FORS 6221.

FORS 6231. Principles of Toxicology. 3 Credits.

Concepts of toxicology, including its historical development and modern applications, drug disposition, mechanisms of toxicity; factors that influence toxicity and toxicity evaluation.

FORS 6232. Analytical Toxicology. 3 Credits.

Principles and procedures used in the isolation, identification, and quantitation of drugs of abuse from human samples. Prerequisite: FORS 6202 or permission of instructor.

FORS 6234. Medicinal Chemistry I. 3 Credits.

Theory and principles of classification, synthesis, and structure activity relationships of drugs. Discussion of the complex chemical events that take place between administration of a drug and its action on the user, with emphasis on drugs of abuse.

FORS 6235. Medicinal Chemistry II. 3 Credits.

Chemical, pharmacological, toxicological, and pathological characteristics of commonly abused drugs, including ethanol, barbiturates, narcotics, stimulants, and hallucinogens.

FORS 6236. Forensic Toxicology I. 3 Credits.

Biological, chemical, and pharmacological principles that underlie forensic toxicology. Prerequisite: FORS 6235 or permission of instructor.

FORS 6237. Forensic Toxicology II. 3 Credits.

Lectures, student seminars, and projects dealing with topics of current interest in forensic toxicology. Prerequisite: FORS 6236 or permission of instructor.

FORS 6238. Forensic Chemistry I. 3 Credits.

Examination of glass and soils. Laboratory exercises include refractive index measurements using immersion methods; polarized light observations of minerals; x-ray diffraction analysis of minerals; and classical chemical and physical methods of analysis. Prerequisite: FORS 6202 or permission of instructor. Laboratory fee.

FORS 6239. Forensic Chemistry II. 3 Credits.

Examination of arson accelerants, textile fibers, plastics, and paints. Laboratory exercises include infrared spectrometry and pyrolysis-gas-liquid chromatography of polymeric materials, as well as classical chemical and physical methods of analysis. Prerequisite: FORS 6238 or permission of instructor. Laboratory fee.

FORS 6240. Forensic Drug Analysis. 3 Credits.

Examination of dosage forms of drugs. Laboratory exercises include color spot tests, crystal tests, infrared spectrometry and gas chromatography-mass spectrometry. Laboratory fee.

FORS 6241. Forensic Molecular Biology I. 3 Credits.

Techniques of molecular biology applied to the collection, examination, analysis, and interpretation of biological evidence.

FORS 6242. Forensic Molecular Biology II. 3 Credits.

Advanced methods of forensic molecular biology. Laboratory examinations and classifications of dried blood and other biological materials through a variety of nuclear and mitochondrial markers. Laboratory fee. Prerequisite: FORS 6241 and permission of instructor.

FORS 6243. Forensic Molecular Biology III. 3 Credits.

FORS 6246. Human Genetic Variation. 3 Credits.

The genetic variation in human populations as a framework for measurement and analysis of genetic diversity and evolutionary process. Consideration of the possible roles of cultural change leading to adaptive/selective events. Same as ANTH 6406.

FORS 6247. Population Genetics. 3 Credits.

Origin, maintenance, and possible significance of genetic variation in populations. Selection, genetic drift, and population structure are emphasized. Both theoretical and applied aspects of population genetics are discussed. Same as BISC 6228.

FORS 6250. Crime Scene Investigation for Lab Personnel. 3 Credits.

A condensed offering of the subject matter of FORS 6251-FORS 6252. FORS 6250 cannot be taken for credit toward the crime scene investigation concentration. Laboratory fee.

FORS 6251. Crime Scene Investigation I-II. 3 Credits.

Examination, analysis, and reconstruction of crime scenes. Principles from biology, chemistry, and physics applied to identification, documentation, preservation, and collection of physical evidence. Laboratory fee.

FORS 6252. Crime Scene Investigation I2II. 3 Credits.

Continuation of FORS 6251. Examination, analysis, and reconstruction of crime scenes. Principles from biology, chemistry, and physics applied to identification, documentation, preservation, and collection of physical evidence. Laboratory fee.

FORS 6254. Forensic Psychiatry. 3 Credits.

Introduction to the constructs of dynamic psychiatry, psychiatric treatment, and the nomenclature of mental disorders. Consideration of expert testimony, direct examination, and cross-examination in hospitalization and criminal cases.

FORS 6255. Investigation of Child Abuse. 3 Credits.

This course integrates medical, scientific, psychological, sociological and legal information for investigators and professionals involved in the field of child abuse. Special emphasis will be placed on the application of research-supported data to situations involving the murder, abuse and exploitation of children.

FORS 6256. Forensic Pathology. 3 Credits.

Terminology and scientific techniques used in medico-legal investigations, sudden or unexpected deaths, homicides, suicides, accidental deaths, and trauma.

FORS 6257. Medicolegal Death Investigation. 3 Credits.

Medical, scientific, sociological, and legal methodologies applied to forensic investigations. Aspects of death scene analysis by a medical examiner, including autopsy procedures, unidentified remains, child death investigations, and mass disaster investigations. Prerequisite: FORS 6256 and permission of instructor. Laboratory fee.

FORS 6259. Computer Related Law. 3 Credits.

A problem-oriented course that focuses on applying the holdings of cases and analysis of statutes to different criminal fact patterns. The course is designed to examine criminal law, criminal procedures, and evidence as it relates to computer crime and the collection/analysis of digital evidence. Open only to students enrolled in off-campus forensic sciences programs.

FORS 6260. Security Case Law. 3 Credits.

Negligence and liability, international torts, compensatory and punitive damages, and contract law. The exercise of security functions by private individuals and organizations.

FORS 6261. Security Management. 3 Credits.

An overview of the factors that shape modern security management: technology, law, ethics and societal changes. The course focuses on risk assessment and the necessity to identify, analyze, and counter threat.

FORS 6264. Protection of Information Systems. 3 Credits.

An overview of the types of information assets that need protection from loss. Basic techniques covered include: effective protection of automated information, including backup, disaster management, and intrusion detection.

FORS 6271. Forensic Psychology. 3 Credits.

Application of principles of psychology in civil and criminal proceedings: determining criminal responsibility, competence to stand trial, and testamentary capacity; jury selection.

FORS 6273. RschMethods for SecurityProfs. 3 Credits.**FORS 6277. Computer Forensics I: Investigation and Data Gathering. 3 Credits.**

Techniques used to conduct computer crime investigations and gather probative evidence to secure conviction under federal law. The role of the high-technology crime investigator as expert witness. Open only to students enrolled in the department or by approval of the program director. Laboratory fee.

FORS 6278. Computer Forensics II: Evidence and Analysis. 3 Credits.

Threats to, and vulnerabilities of, computer systems and how to minimize them. Prerequisite: FORS 6277. Laboratory fee.

FORS 6279. Incidence Response: Understanding and Identifying Network-Based Attacks. 3 Credits.

Computer network operations and network-based computer crime. Fraud schemes related to electronic commerce, theft of sensitive computer information, compromise of computer networks, and identity theft. Elements of proof of network-based crime are discussed. Prerequisite: FORS 6277 or approval of program director. Laboratory fee.

FORS 6280. Advanced Incidence Response: Investigating Network-Based Attacks. 3 Credits.

Detecting and responding to network- and host-based intruders, integrating intrusion detection systems into network topologies, identifying methods hackers use to break into network systems, analyzing network traffic and detecting attacks, and creating an effective response strategy. Prerequisite: FORS 6279. Laboratory fee.

FORS 6283. Steganography and Electronic Watermarking. 3 Credits.

Digital data hiding techniques. Investigation of data hiding and labeling techniques, attacks against steganography and watermarked information; countermeasures to such attacks. Open only to students enrolled in the department or by approval of the program director. Laboratory fee. Prerequisite: FORS 6277, FORS 6278.

FORS 6284. Security Mgt Capstone Course. 3 Credits.**FORS 6285. High-Technology Crime Investigation Capstone Course. 3 Credits.**

For students in the final semester of the high-technology crime investigation program only. Simulation of a computer forensic investigation: developing an investigation plan, securing the crime scene, analyzing evidence, preparing the case for court, and testifying in a moot court situation. Laboratory fee.

FORS 6287. Project Management for Security Professionals. 3 Credits.**FORS 6288. The Investigative Process for Computer Forensics. 3 Credits.**

In-depth examination of the investigative process for computer-related crime in both criminal and civil sectors. Topics include identification and validation of information sources, development and handling of informants, interview and interrogation techniques, and managing the investigative process.

FORS 6290. Selected Topics. 3 Credits.

Current issues in research, investigation, and law.

FORS 6291. Computer Forensics III: Advanced Techniques. 3 Credits.

Further examination of methods and techniques used to conduct and report high-technology crime investigations. Open only to students enrolled in the department or by approval of the program director. Laboratory fee. Prerequisite: FORS 6278.

FORS 6292. Graduate Seminar. 1 Credit.

Students in designated forensic sciences degree programs must register for this course in their first semester and again after completion of the required independent research project.

FORS 6295. Research. 1-12 Credits.

Research on problems approved by the department, under the supervision of an appropriate member of the program faculty. Admission by permission only.

FORS 6298. Forensic Sciences Practicum. 1-3 Credits.

Internship experience in a forensic science laboratory or criminal justice agency, under the supervision of an appropriate member of the program faculty. Students must preregister for this course. Admission by permission only.

FORS 6998. Thesis Research. 3 Credits.**FORS 6999. Thesis Research. 3 Credits.**

FRENCH (FREN)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FREN 1000. Dean's Seminar. 3 Credits.**FREN 1001. Basic French I. 4 Credits.**

Handling the immediate context of daily experience in spoken and written French: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee.

FREN 1002. Basic French II. 4 Credits.

Speaking and writing in French about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: FREN 1001 . Laboratory fee.

FREN 1003. Intermediate French I. 3 Credits.

Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (e.g., repeating or relaying messages, giving reports, summarizing). Prerequisite: FREN 1002 . Laboratory fee.

FREN 1004. Intermediate French II. 3 Credits.

Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: FREN 1003 . Laboratory fee.

FREN 1006. French Language & Culture I. 3 Credits.

Offered through the GW Paris Business Studies Program.

FREN 1007. French Language & Cultures II. 3 Credits.

Continuation of FREN 1006. Offered through the GW Paris Business Studies Program.

FREN 2005. Language, Culture & Society I. 3 Credits.

Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: FREN 1004. Laboratory fee.

FREN 2006. Language, Culture & Society II. 3 Credits.

Continued expansion of the range and complexity of conversational skills and further development of the writing of effective expository prose on a broad range of contemporary subjects. Short texts serve as the basis for oral discussion, analytical reading, and writing brief critical essays. Prerequisite: FREN 2005. Laboratory fee.

FREN 2049. French for Graduate Students. 0 Credits.

For graduate students preparing for reading examinations. No academic credit. Tuition is charged at the rate of 3 credit hours. (Fall, spring, and summer).

FREN 3010W. Advanced French Grammar and Style. 3 Credits.

Composition, drills, dictations. Translations into French. Study of vocabulary and syntax, with emphasis on stylistic devices. Prerequisite: FREN 2006.

FREN 3020. Contemporary France. 3 Credits.

Emphasis on advanced oral work. Discussion of French culture and civilization, based on contemporary writings and video documents. Prerequisite: FREN 2006. Laboratory fee.

FREN 3030. Business & Commercial French. 3 Credits.

Structure and language of French economic institutions. Discussion of legal, financial, and administrative documents. Oral and written reports. Preparation for the certificate of the Paris Chamber of Commerce. Prerequisite: FREN 2006.

FREN 3100. Introduction to French Literature. 3 Credits.

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. French and Francophone literatures in their cultural contexts. Close reading approach and introduction to literary vocabulary. Prerequisite: FREN 2006.

FREN 3100W. Introduction to French Literature. 3 Credits.

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. French and Francophone literatures in their cultural contexts. Close reading approach and introduction to literary vocabulary. Prerequisite: FREN 2006.

FREN 3210. Medieval and Early Modern French Literature in Context. 3 Credits.

Texts of the Middle Ages to the 17th century studied in their historical, social, and cultural contexts. Topics may include feudal society and the literature of courtly love; humanism, Rabelais, and Renaissance poetry; women and salon writing; Versailles, absolutism, and classical theater.

FREN 3220. Modern French Literature. 3 Credits.

Texts of the 18th century to the present in historical, social, and cultural contexts. Topics may include philosophes and the rise of social consciousness; the French Revolution and Romanticism; dada and surrealism; existentialism and World War II; decolonization and francophone literature.

FREN 3290. Textual Analysis. 3 Credits.

Methodology and vocabulary of literary criticism. Application of various principles of textual analysis and critical approaches to literature.

FREN 3300. Topics in French and Francophone Literatures and Cultures in Translation. 3 Credits.

Dynamics of French-speaking societies and their cultures studied through literature, art, or film. Topics vary. Readings and lectures in English. The course may be repeated for credit. A laboratory fee may be required. (Spring).

FREN 3400. Studies in Genre. 3 Credits.

Study in narrative, dramatic, or lyric form. Topics vary. May be repeated for credit. (Spring).

FREN 3520. The Age of Classicism. 3 Credits.

Drama, philosophy, criticism, poetry, and fiction of the 17th century. Topics may include préciosité, baroque, Jansenism, classicism, and rationalism in the context of the major social, political, and religious movements of the period.

FREN 3530. The Age of Enlightenment. 3 Credits.

The major novelists, dramatists, and philosophes of the 18th century. The works of Montesquieu, Voltaire, Rousseau, and Diderot and their relationship to the social, political, and philosophical thought of the period. (Fall, alternate years).

FREN 3550. Studies in 20th-Century French Literature. 3 Credits.

Major literary movements of the 20th century: avant-garde, surrealism, existentialism, nouveau roman, and nouveau théâtre. (Spring).

FREN 3560. Topics in 20th-Century Francophone Literature and Cinema. 3 Credits.

Analysis of relations between France and its former colonies as manifested in the literature and cinema of France and the Francophone world. Race and gender relations; exile; nationalism; and identity and place as seen through various literary and cinematic responses to the discourses of metropolitan France by its former colonies. Laboratory fee.

FREN 3600. Special Topics in French Literature. 3 Credits.

May be repeated for credit provided the topic differs.

FREN 3700. History of French Cinema. 3 Credits.

French cinema from its inception to the "New Wave." The relationship of filmmaking and audience reception to the evolution of French society and political institutions. The language of cinema as it evolves according to periods and genres and as critics and filmmakers create a theoretical discourse specific to film. Laboratory fee.

FREN 4135. Folger Seminar. 3 Credits.

The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as ENGL 4135/ HIST 4135.

FREN 4470. Writing Women. 3 Credits.

Dynamics of gender in French literature and culture with emphasis on women as agents and objects of representation. Gender roles in the formation of social biases, norms, and power structures. Texts range from the Middle Ages to the present.

FREN 4500. Studies in Medieval French Literature. 3 Credits.

Readings and analysis of the major literary texts from the 11th through 15th centuries. Chansons de geste, courtly literature, fabliaux, drama, lyric and didactic poetry.

FREN 4510. French Literature of the Renaissance. 3 Credits.

Sixteenth-century prose and poetry in the context of cultural and historical movements. Topics may include humanism; concepts of self and subjectivity; the wars of religion; the discovery of the New World; court and city life; the private and public spheres; religious and secular love.

FREN 4540. 19th-Century French Literature and Culture. 3 Credits.

Key aspects of 19th-century French literature in its historical, cultural, and political context. Major authors and literary movements are studied through the lens of a particular theme, which varies from year to year. (Fall, alternate years).

FREN 4600. Special Topics in French Literature. 3 Credits.

May be repeated for credit provided the topic differs.

FREN 4800. Independent Study. 1-4 Credits.

Admission by permission of department chair and instructor. May be repeated for credit.

FREN 4910. Proseminar: Rdgs for the Major. 3 Credits.

Required of all majors; preparation of the senior essay. The specified topic in the history of French literature varies by year.

FREN 4920. Proseminar. 3 Credits.

Continuation of FREN 4910. Required of all majors; preparation of the senior essay. The specified topic in the history of French literature varies by year.

FREN 4920W. Proseminar II. 3 Credits.

Continuation of FREN 4910. Required of all majors; preparation of the senior essay. The specified topic in the history of French literature varies by year.

GEOGRAPHY (GEOG)

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GEOG 1000. Dean's Seminar. 3 Credits.**GEOG 1001. Introduction to Human Geography. 0-3 Credits.**

A systematic survey of human geography; spatial perspectives on demographic, social, cultural, economic, and political changes around the world. (Fall and spring).

GEOG 1002. Introduction to Physical Geography. 4 Credits.

A systematic survey of environmental geography; perspectives on environments and human ecology, including ecosystems and their use, and resource geography. Laboratory fee. (Fall and spring).

GEOG 1003. Society and Environment. 0-3 Credits.

An introduction to the dynamic relationship between society and the physical environment, with focus on population, natural resources, environmental degradation, pollution, and conservation.

GEOG 2104. Introduction to Cartography and GIS. 3 Credits.

Fundamentals of cartography; geographic data structure and information systems. Laboratory fee.

GEOG 2105. Techniques of Spatial Analysis. 3 Credits.

Nature of geographical inquiry and analytical methods used in the study of spatial processes and patterns. Laboratory fee.

GEOG 2107. Introduction to Remote Sensing. 3 Credits.

Remote-sensing techniques using digital satellite imagery and aerial photography. Application to rural and urban settings, vegetation, and environmental monitoring. Laboratory fee. Prerequisite: GEOG 2105 or permission of instructor.

GEOG 2108. Weather and Climate. 3 Credits.

The elements and controls of weather and climate. Topics include energy and water balances, atmospheric general circulation, and severe weather events. Prerequisite: GEOG 1002.

GEOG 2110. Climate and Human Ecology. 3 Credits.

Interrelationships between human activities and the climatic environment. Emphasis on global climatic change. Prerequisite: GEOG 1002.

GEOG 2124. Urban Transportation. 3 Credits.

The relationship between freight and passenger transportation systems and urban land use patterns and structure. Prerequisite: GEOG 1001.

GEOG 2125. Transportation and Communication. 3 Credits.

The structure and evolution of transportation networks and their impact on regional development. Prerequisite: GEOG 1001.

GEOG 2127. Population Geography. 3 Credits.

Patterns of world population; factors contributing to population pressures, growth, and migrations.

GEOG 2128. Geomorphology. 3 Credits.

Understanding the nature, origin, and development of landforms in the field and through the use of maps and aerial photos. Prerequisite: GEOG 1002.

GEOG 2133. People, Land, and Food. 3 Credits.

Domestication and dispersal of plants and animals; development of agricultural systems; spatial disparities in world food production, demand, and distribution.

GEOG 2134. Energy Resources. 3 Credits.

Analysis of regional patterns and trends in consumption and production of energy resources. Examination of international energy linkages and energy policies of selected nations. Prerequisite: GEOG 1002.

GEOG 2134W. Energy Resources. 3 Credits.

Analysis of regional patterns and trends in consumption and production of energy resources. Examination of international energy linkages and energy policies of selected nations. Prerequisite: GEOG 1002.

GEOG 2136. Water Resources. 3 Credits.

Analysis of the global spatial patterns, development, use, and quality of water resources. Prerequisite: GEOG 1002.

GEOG 2137. Environmental Hazards. 3 Credits.

Examination of environmental hazards with emphasis on the use of geographic information systems. Prerequisite: GEOG 1002.

GEOG 2140. Cities and Societies. 3 Credits.

The design and function of cities in the United States; contemporary, economic, political, and social change. Prerequisite: GEOG 1001.

GEOG 2140W. Urban Geography. 3 Credits.

The design and function of cities in the United States; contemporary, economic, political, and social change. Prerequisite: Geog 1001.

GEOG 2141. Cities in the Developing World. 3 Credits.

Urbanization processes, problems, and management in the developing world. Focus on urban location, politics, housing, services, employment, and environmental issues. Prerequisite: GEOG 1001.

GEOG 2144. Explorations in Historical Geography. 3 Credits.

Examination of selected themes in the cultural geography of the United States over the course of its history, in relation to an overview of the historical geography of the country. Same as AMST 2144.

GEOG 2145. The Cultural Landscape. 3 Credits.

The distribution and dynamics of cultural patterns around the world; analysis of culture as a process.

GEOG 2145W. Cultural Geography. 3 Credits.

The distribution and dynamics of cultural patterns around the world; analysis of culture as a process.

GEOG 2146. Political Geography. 3-4 Credits.

Interrelationships among the human and physical environment and political systems; the organization of political territories.

GEOG 2147. Military Geography. 3 Credits.

An examination of environmental and locational factors and their impact on military planning and operations.

GEOG 2148. Economic Geography. 3 Credits.

Locational influences on and spatial variation of the development of manufacturing, services, trade, and finance. Prerequisite: GEOG 1001.

GEOG 2196. Field Methods in Geography. 3 Credits.

For geography and environmental studies majors in their junior or senior year. Field research in human and physical geography. Students participate in several field exercises and develop their skills of observation, field mapping, repeat photography, and surveys. Laboratory fee.

GEOG 3106. Intermediate Geographic Information Systems. 3 Credits.

Principles of geographic information systems and their use in spatial analysis and information management. Laboratory fee. Prerequisite: GEOG 2104 and GEOG 2105.

GEOG 3120. World Regional Geography. 3 Credits.

World cultural regions and the impacts of globalization; the environmental human conditions that undergird current problems and future prospects.

GEOG 3132. Environmental Quality and Management. 3 Credits.

The evolution of environmental management philosophies and tools. The global distribution, utilization, and degradation of natural resources. Prerequisite: GEOG 1002.

GEOG 3143. Urban Sustainability. 3 Credits.

Relationship between urban spaces and the environment through the lens of sustainability. Prerequisite: GEOG 1001.

GEOG 3143W. Urban Sustainability. 3 Credits.

Relationship between urban spaces and the environment through the lens of sustainability. Prerequisite: GEOG 1001.

GEOG 3154. Geography of the Middle East and North Africa. 3 Credits.

Cultural and physical regional patterns of the Middle East and North Africa. Prerequisite: Geog 1001 or GEOG 1002.

GEOG 3161. Geography of Latin America. 3 Credits.

Examination of spatial characteristics of physical and cultural phenomena in Latin America.

GEOG 3164. The Geography of Africa. 3 Credits.

Cultural and physical patterns of Africa. Prerequisite: GEOG 1001 or GEOG 1002.

GEOG 3165. Geography of South Asia. 3 Credits.

An examination of the complex interplay of environmental, economic, sociocultural, and political factors in South Asia and their effects at the local and regional levels.

GEOG 3189. Readings in Geography I. 1-12 Credits.

Prerequisite: 12 credit hours of geography and permission of instructor.

GEOG 3190. Readings in Geography II. 1-12 Credits.

Continuation of GEOG 3189. Prerequisite: 12 credit hours of geography and permission of instructor.

GEOG 3198. Special Topics. 3 Credits.

Consideration of geographic aspects of topical and future problems of society. May be repeated for credit provided that the topic differs. Prerequisite: GEOG 1001 or GEOG 1002.

GEOG 3810. Building Cities. 3 Credits.

An examination of historical and contemporary trends and dynamics in urban planning in the United States and abroad. Same as AMST 3810. Prerequisite: GEOG 1001.

GEOG 4121. Advanced Geographic Information Systems. 3 Credits.

Integration of GIS, remote sensing, and spatial modeling. Laboratory fee. Prerequisite: GEOG 2107 and GEOG 3106.

GEOG 4195. Proseminar in Geographic Thought. 3 Credits.

For students completing the major in geography. Development of geographic thought, theories, and methodologies; geographic curricula. Prerequisite: permission of the advisor.

GEOG 4195W. Proseminar in Geographic Thought. 3 Credits.

For students completing the major in geography. Development of geographic thought, theories, and methodologies; geographic curricula. Prerequisite: permission of the advisor.

GEOG 4199. Internship. 1-3 Credits.

Fieldwork, internship, or other controlled assignment with an agency or organization engaged in work in applied geography. Prerequisite: 12 credit hours of geography courses and permission of instructor. May be repeated for credit to a maximum of 6 credits.

GEOG 6201. Geographic Thought and Methods. 3 Credits.

For first-year master's students, a survey of geographic thought, theories, and methods. Emphasis on contemporary issues in geography and on the development of research.

GEOG 6207. Urban Planning and Development. 3 Credits.

Selected problems in urban and regional planning: applications of zoning, environmental controls, and other techniques for achieving sustainable urban development.

GEOG 6208. Land Use and Urban Transportation Planning. 3 Credits.

Relationships between land use and the movement of goods and people. Examination of land use and transportation planning principles, issues, and techniques. Roles of public and private interests in land use and transportation planning and management.

GEOG 6219. Seminar: Climatology. 3 Credits.

Inadvertent climate modification due to urbanization and impacts on environmental and human health.

GEOG 6220. Seminar: Climatic Change. 3 Credits.

Examination of natural and human-induced climatic change, at global, regional, and local scales.

GEOG 6222. Seminar: Resources and the Environment. 3 Credits.

Topics related to the spatial variations and interrelationships of resources and the environment; applications of geographic information systems and remote sensing. Prerequisite: permission of instructor.

GEOG 6223. Seminar: Population and Health. 3 Credits.

Interrelationships between population characteristics and dynamics and impacts on human health.

GEOG 6224. Seminar: Political Geography. 3 Credits.

Examination of political factors in location theory and analysis of the nature of political territories and conflict.

GEOG 6225. Seminar: Transportation and Development. 3 Credits.

Transportation and communication in the organization of space.

GEOG 6230. Seminar: Environmental Issues in Development. 3 Credits.

A consideration of the geographical dimensions of the links between development and the environment.

GEOG 6232. Migration and Development. 3 Credits.**GEOG 6243. Seminar: Urban Geography. 3 Credits.**

Topics concerning social, political, economic, and environmental issues in U.S. cities.

GEOG 6244. Urban Sustainability. 3 Credits.

Urban sustainability and environmental issues in developed and developing cities.

GEOG 6250. Geographical Perspectives on Development. 3 Credits.

Theory and debates surrounding economic development in a globalizing world, with case studies.

GEOG 6261. Geographical Perspectives on Latin America. 3 Credits.

Natural resources, the environment, and population dynamics through time.

GEOG 6262. Geographical Perspectives on the Middle East. 3 Credits.

Examination of selected topics related to political, economic, social, cultural, and geographic patterns and processes in the region.

GEOG 6265. Seminar: Geography of the Former Soviet Union. 3 Credits.**GEOG 6290. Principles of Demography. 3 Credits.**

Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as ECON 6290/ SOC 6290/ STAT 6290.

GEOG 6291. Methods of Demographic Analysis. 3 Credits.

Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as ECON 6291/ SOC 6291/ STAT 6291.

GEOG 6293. Special Topics. 3 Credits.

Consideration of geographic aspects of topical social or environmental problems. May be repeated for credit provided the topic differs.

GEOG 6295. Research. 1-12 Credits.

May be repeated for credit.

GEOG 6299. Internship. 1-3 Credits.**GEOG 6304. Geographical Information Systems I. 3 Credits.****GEOG 6305. Geospatial Statistics. 3 Credits.****GEOG 6306. Geographical Information Systems II. 3 Credits.****GEOG 6307. Digital Image Processing. 3 Credits.**

This course introduces students to the theoretical, technical and applied aspects of remote sensing as a tool for monitoring and managing earth resources. This course will provide students with the knowledge for analyzing and applying remotely sensed data for problem solving as it applies to land cover. The core curriculum focuses on: electromagnetic radiation transfer; data collection with aerial and satellite sensor systems, while providing an introduction to image processing.

GEOG 6309. GIS for Emergency Management. 3 Credits.

This course will introduce students to the theoretical principles of geographic information systems and will examine its history, current uses and potential for emergency management through case studies, guest lectures and hands-on training on various GIS products.

GEOG 6998. Thesis Research. 3 Credits.**GEOG 6999. Thesis Research. 3 Credits.**

GEOLOGY (GEOL)

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GEOLOGY 1001. Physical Geology. 3 Credits.

Lecture, laboratory. An introduction to the principal features of the composition and structure of the earth. Topics include the nature of minerals and rocks, surface and deep earth processes, mineral and energy resources, and plate tectonics. Laboratory fee. Credit will not be given for both GEOLOGY 1001 and GEOLOGY 1005.

GEOLOGY 1002. Historical Geology. 3 Credits.

Lecture, laboratory. An introduction to the history of the earth. Topics include sedimentary environments, plate tectonics, origin of life, and evolution. Laboratory fee. Prerequisite: Geol 1001 or GEOLOGY 1005.

GEOLOGY 1005. Environmental Geology. 3 Credits.

Lecture, laboratory. An introduction to the impact of geology on the environment, with emphasis on the relation of people and society to natural environments; population evolution, natural hazards, and mineral resources. Laboratory fee. Credit will not be given for both GEOLOGY 1001 and GEOLOGY 1005.

GEOLOGY 1006. Science & the Environment. 3 Credits.

The large-scale processes operating within the atmosphere, oceans, and solid Earth. Prerequisite: GEOLOGY 1001 or GEOLOGY 1005.

GEOLOGY 2106. Oceanography. 3 Credits.

The ocean with its many environments represents the last largely unexplored frontier on earth. Origin of the ocean systems and plate tectonics, ocean habitats and their biota, marine hydrology and ocean currents; air-sea interaction and climate control; ocean mapping techniques; environmental regulations covering marine resources. Laboratory fee. Prerequisite: GEOLOGY 1001 or GEOLOGY 1005.

GEOLOGY 2111. Mineralogy. 4 Credits.

Lecture and laboratory. Introduction to the crystallography and chemical systematics of rock-forming and ore minerals. Exercises emphasize the analysis of mineralogic data and the paragenesis of mineral assemblages. Prerequisite: GEOLOGY 1001 or GEOLOGY 1005 or permission of instructor. Laboratory fee.

GEOLOGY 2112. Igneous and Metamorphic Petrology. 4 Credits.

Lecture and laboratory. Introduction to basic light theory and the identification and characterization of minerals through optical properties. Laboratory exercises provide an introduction to petrologic analysis of igneous and metamorphic mineral systems. Prerequisite: GEOLOGY 2111 or permission of the instructor. Laboratory fee.

GEOLOGY 2122. Structural Geology. 3 Credits.

Lecture and laboratory. Study of natural and experimental rock deformation and the relationships between stress and strain as recorded by geologic structures. Prerequisite: GEOLOGY 1001 or GEOLOGY 1005. Laboratory fee.

GEOLOGY 2151. History of Life. 3 Credits.

A review of the origin of life, the geologic record, and the evolutionary history of the major groups of organisms, including the origin of life and evolution of invertebrates, vertebrates, and plants. Prerequisite: GEOLOGY 1001 or GEOLOGY 1002 or BISC 1111– BISC 1112. Laboratory fee. Same as BISC 2451.

GEOLOGY 2159. Geobotanical Ecology of the Central Appalachians. 4 Credits.

A multidisciplinary approach to Appalachian ecology involving application of scientific principles from both geology and botany, stressing interrelationships between geological, geochemical, and biological processes. Field trips. Laboratory fee. Prerequisite: GEOLOGY 1001 or GEOLOGY 1005 and BISC 1111– BISC 1112; with permission of instructor.

GEOLOGY 2190. Special Topics in Geology. 1-3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

GEOLOGY 2333. Evol.&Extinction of Dinosaurs. 3 Credits.**GEOLOGY 3118. Volcanology. 3 Credits.**

Fundamental principles and geologic processes associated with volcanism. Eruptive styles, processes leading to magma production and transport, triggering mechanisms, plate tectonic settings, volcanic hazards, and disaster mitigation. Case histories of selected volcanic eruptions examined in detail. Prerequisite: GEOLOGY 2111 or permission of instructor. Laboratory fee.

GEOLOGY 3119. Field Experience in Volcanology. 1 Credit.

Week-long field exercise at a major volcanic center in the western United States. Field-based interpretation and analysis of volcanic and related rocks. The geology of each site and the processes responsible for volcanism discussed in detail. Corequisite: GEOLOGY 3118. Deposit for expenses is required.

GEOL 3123. Crustal Dynamics. 0-3 Credits.

Basic plate tectonic processes and features; the plate tectonic paradigm in historical evolutionary framework. Students present an original research project orally and in writing. Prerequisite: GEOL 2122. Laboratory fee.

GEOL 3126. Sedimentology and Stratigraphy. 4 Credits.

Lecture and laboratory. Introduction to sedimentation and stratigraphy; origin and classification of sediments and sedimentary rocks; introduction to clastic and carbonate depositional environments and stratigraphic principles. Prerequisite: GEOL 1002, GEOL 2111. Laboratory fee.

GEOL 3131. Global Climate Change. 3 Credits.

Fundamental causes and patterns of climate change. Methods of reconstruction of past climates; modeling and predicting climate change.

GEOL 3138. Hydrogeology. 3 Credits.

Principles and theory of basic and applied hydrology: surface water hydrology, geology of groundwater systems, groundwater flow, surface water-groundwater interactions, contamination and remediation technologies, conservation, management, and regulations. Prerequisite: GEOL 2111, GEOL 2122; MATH 1221 or MATH 1231; or permission of instructor. Laboratory fee.

GEOL 3140. Geochemistry. 3 Credits.

Chemical systems and processes on the planet Earth; origins and interactions among and within the Earth's lithosphere, oceans, and atmosphere; origin, distribution, and behavior of the elements; radioactive and stable isotope systems. Aqueous geochemistry; geochemical cycles. Same as CHEM 3140. Prerequisite: GEOL 1001 or GEOL 1005; CHEM 1111- CHEM 1112.

GEOL 3189. Geophysics. 3 Credits.

Principles of magnetic, gravity, seismic and electrical methods applied to geological problem-solving. Prerequisite: GEOL 2122 or permission of instructor.

GEOL 3191. Geology of Energy Resources. 3 Credits.

Principles of geology applied in energy exploration, exploitation, and production; the geology of energy resources in ocean basins; borehole and surface geophysical applications and reconnaissance mapping techniques; management and regulation of energy resources; sustainability, efficiency, and conservation issues. Prerequisite: GEOL 2122 or permission of instructor. Laboratory fee.

GEOL 3193. Intro to Environmental Law. 3 Credits.**GEOL 4195. Geological Field Methods. 4 Credits.**

Weekend field trips. Methods of outcrop analysis, geologic mapping, and data interpretation. The geological evolution of the central Appalachian mountains and the plate tectonic processes responsible for their formation emphasized. Prerequisite: GEOL 2111, GEOL 2122. Field trip fee.

GEOL 4195W. Geological Field Methods. 4 Credits.**GEOL 4199. Undergraduate Research or Reading. 1-12 Credits.**

Problems approved by the staff. May be repeated for credit.

GERMANIC LANGUAGE AND LITERATURE (GER)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GER 1000. Dean's Seminar. 3 Credits.**GER 1001. First-Year German I. 4 Credits.**

Fundamentals of speaking, understanding, reading, and writing German. Laboratory fee.

GER 1002. First-Year German II. 4 Credits.

Continuation of GER 1001. Fundamentals of speaking, understanding, reading, and writing German. Prerequisite: GER 1001. Laboratory fee.

GER 1003. Second-Year German I. 4 Credits.

Fundamentals of speaking, understanding, reading, and writing German. Prerequisite: GER 1002. Laboratory fee.

GER 1004. Second-Year German II. 4 Credits.

Continuation of GER 1003. Fundamentals of speaking, understanding, reading, and writing German. Prerequisite: GER 1003. Laboratory fee.

GER 1005. Intensive Beginning German I. 8 Credits.

Intensive course in fundamentals of speaking, understanding, reading, and writing German (equivalent to GER 1001- GER 1002). Recommended for majors. Laboratory fee.

GER 1006. Intensive Beginning German II. 8 Credits.

Continuation of GER 1005. Intensive course in fundamentals of speaking, understanding, reading, and writing German (equivalent to GER 1003- GER 1004). Prerequisite: GER 1002 or GER 1005. Recommended for majors. Laboratory fee.

GER 2009. Intermediate German I. 3 Credits.

Practice in speaking, listening, reading, and writing at the intermediate level. Prerequisite: GER 1004 or GER 1006 or permission of instructor.

GER 2010. Intermediate German II. 3 Credits.

Continuation of GER 2009. Practice in speaking, listening, reading, and writing at the intermediate level. Prerequisite: GER 1004 or GER 1006 or permission of instructor.

GER 2091. Introduction to German Literature—in English I. 3 Credits.

Survey of German literature 1700-1830, including the Enlightenment through Sturm und Drang, classicism, and romanticism.

GER 2092. Introduction to German Literature—in English II. 3 Credits.

Continuation of GER 2091. Survey of German literature 1830-1950, including Young Germany through realism, naturalism, expressionism, and the literature of the Third Reich years (exile literature and inner emigration).

GER 2101. Readings in Contemporary German I. 3 Credits.

Analysis of representative readings of expository prose from German newspapers, periodicals, and other publications.

Prerequisite: for GER 2101, GER 1004 or GER 1006 .

GER 2102. Readings in Contemporary German II. 3 Credits.

Continuation of GER 2101. Analysis of representative readings of expository prose from German newspapers, periodicals, and other publications. Prerequisite: GER 2101.

GER 2109. Introduction to German Studies I. 3 Credits.

An introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Prerequisite: GER 2010 or permission of instructor.

GER 2109W. Introduction to German Studies I. 3 Credits.

An introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Prerequisite: GER 2010 or permission of instructor.

GER 2110. Introduction to German Studies II. 3 Credits.

Continuation of GER 2109. An introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Prerequisite: GER 2010 or permission of instructor.

GER 2110W. Introduction to German Studies II. 3 Credits.

Continuation of GER 2109. An introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Prerequisite: GER 2010 or permission of instructor.

GER 2111. Business German. 3 Credits.

Introductory course preparing students to function in business-related communicative situations, with an emphasis on language skills necessary for work in areas such as marketing and finance. Prerequisite: GER 2010 or permission of instructor.

GER 2161. German Culture—in English I. 3 Credits.

The central problems, issues, and events that have shaped the development of German culture from antiquity to the present. Emphasis on products and processes of German culture in social, historical, and political contexts.

GER 2162. German Culture—in English II. 3 Credits.

Continuation of GER 2161. The central problems, issues, and events that have shaped the development of German culture from antiquity to the present. Emphasis on products and processes of German culture in social, historical, and political contexts.

GER 2165. 20th-Century German Literature—in English. 3 Credits.

Survey of the major trends in the works by modernist, exile, postwar, and contemporary German writers such as Kafka, Thomas Mann, Duerrenmatt, and Grass.

GER 3181. History of German Cinema—in English. 3 Credits.

A detailed historical and cultural survey of German cinema from the first moving picture devices (1895) to the expressionistic classics of the 1920s and the collapse of the Nazi film industry in 1945. All films are subtitled.

GER 3182. The Fairy Tale from the Grimms to Disney—in English. 3 Credits.

Survey of the changing form, structure, and meaning of the fairy tale in its traditional contexts, modern transformations and critical interpretations, with readings by 19th-century European collectors and 20th-century critics.

GER 3183. Berlin Before & After the Wall. 3 Credits.

The political, social, and cultural developments in Berlin from 1945 to the present through a reading of selected primary documents, historical analyses, and short literary texts.

GER 3184. German Thought - in English. 3 Credits.

An overview of German ideas about culture, religion, society, and politics from the 16th century to the present. Readings from such writers as Luther, Leibniz, Kant, Schiller, Hegel, Marx, Nietzsche, Freud, Weber, Heidegger, Adorno, and Habermas.

GER 3185. Literary Voices and the Fascist Experience—in English. 3 Credits.

A survey of writers anticipating as well as reflecting on Germany's plunge into the totalitarian abyss of fascist politics, including H. Mann, Kafka, Juenger, Brecht, Werfel, Thomas Mann, Lenz, Frisch, Duerrenmatt, and various forms of Holocaust poetry.

GER 3186. German Women Writers of the 19th and 20th Centuries. 3 Credits.

The changing literary and social roles of German women of the 19th and 20th centuries, examined through selected readings of women's literary production and culture.

GER 3187. German Cinema after 1945. 3 Credits.

The evolution of German cinema, from postwar examinations of the Nazi period through the social and political developments in the two German states. National and international influences; filmic treatments of the two German pasts since unification.

GER 3188. The Lives of East Germans. 3 Credits.

Consideration of what it meant to grow up and live in the German Democratic Republic and the changes and challenges to East German identity since unification. The course draws upon historical, political, and sociological studies as well as literary and filmic representations of East German experience.

GER 3189. Dealing with the Communist Past in Germany and Eastern Europe. 3 Credits.**GER 4171. The Age of Goethe-in German. 3 Credits.**

Readings of major works of Weimar classicism in their historical and cultural context.

GER 4172. From Romanticism to Realism. 3 Credits.

Readings in German romanticism, literature of the "young Germany" movement (Heine), and realism (Fontane, Storm).

GER 4173. Naturalism to Expressionism. 3 Credits.

Study of various literary movements between 1880 and 1914: naturalism, impressionism, symbolism, and expressionism (Hauptmann, Hesse, Thomas Mann, Kafka).

GER 4174. Inside/Outside the Third Reich. 3 Credits.

Analysis of literary developments inside the Nazi state (propaganda literature, literature of resistance, and inner immigration) and the literature of exile (Seghers, Remarque).

GER 4175. Literature of two Germanies. 3 Credits.

Evolution of East and West German literatures after World War II, their separate developments and ultimate unification.

GER 4176. Contemporary German Literature. 3 Credits.

Analysis of works by former East and West German writers after unification as well as the generation of young German writers, who came of age after or around the time of unification. Emphasis on memoirs, family narratives, essays, and films examining Germany's transition from fascism and socialism to democracy.

GER 4195. Special Topics. 1-3 Credits.

May be repeated for credit provided the topic differs. (Fall, spring, and summer).

GER 4197. Senior Honors Thesis I. 3 Credits.

Senior honors thesis on a topic related to German language, literature, or culture. Required of and open only to honors candidates in the department.

GER 4198. Senior Honors Thesis II. 3 Credits.

Continuation of GER 4197. Senior honors thesis on a topic related to German language, literature, or culture. Required of and open only to honors candidates in the department.

GREEK (GREK)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GREK 1001. Beginning Classical Greek I. 4 Credits.

Study of the grammar, vocabulary, and structure of ancient Greek. Reading of selected ancient authors.

GREK 1002. Beginning Classical Greek II. 4 Credits.

Continuation of GREK 1001. Study of the grammar, vocabulary, and structure of ancient Greek. Reading of selected ancient authors. Prerequisite: GREK 1001 .

GREK 2001. Intermediate Classical Greek I. 3 Credits.

Reading of ancient Greek prose or poetic works (e.g., selections from Homer, Plato, Euripides). Review of grammar. Prerequisite: GREK 1002 .

GREK 2002. Intermediate Classical Greek II. 3 Credits.

Continuation of GREK 2001. Reading of ancient Greek prose or poetic works (e.g., selections from Homer, Plato, Euripides). Review of grammar. Prerequisite: GREK 2001 .

GREK 2002W. Intermediate Classical Greek II. 3 Credits.

Continuation of GREK 2001. Reading of ancient Greek prose or poetic works (e.g., selections from Homer, Plato, Euripides). Review of grammar. Prerequisite: GREK 1001-GREK 1002 .

GREK 3001. Major Greek Authors I. 3 Credits.

Selections from a wide variety of Greek prose, drama, and poetry, suited to the needs of the class. May be repeated for credit with permission of instructor. Prerequisite: GREK 2002 .

GREK 3001W. Major Greek Authors II. 3 Credits.

Selections from a wide variety of Greek prose, drama, and poetry, suited to the needs of the class. May be repeated for credit with permission of instructor. Prerequisite: GREK 2002 .

GREK 3002. Major Greek Authors II. 3 Credits.

Continuation of GREK 3001. Selections from a wide variety of Greek prose, drama, and poetry, suited to the needs of the class. May be repeated for credit with permission of instructor. Prerequisite: GREK 2002 .

GREK 3002W. Intermediate Classical Greek II. 3 Credits.

Continuation of GREK 3001. Selections from a wide variety of Greek prose, drama, and poetry, suited to the needs of the class. May be repeated for credit with permission of instructor. Prerequisite: GREK 2002 .

HEALTH CARE QUALITY (HCQ)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HQ 6200. Introduction to Health Care Quality. 3 Credits.

An overview of the US health care system and the influence of health policy development and implementation on health care quality. Introduction to fundamental concepts of health care quality, patient safety, leadership, and change management. (Fall, spring, and summer).

HQ 6201. Building a Quality Culture. 3 Credits.

Application of leadership and organizational change theories and principles to the implementation of quality and patient safety initiatives. Focus on strategies for developing the culture and infrastructure needed to support patient safety and continuous quality improvement.

HQ 6202. Health Care Quality Landscape. 3 Credits.

Analysis of quality and patient safety challenges in US health care with a focus on political and environmental influences.

HQ 6203. Quality Improvement Science. 3 Credits.

An introduction to quality improvement and patient safety theories, models, methods and tools and their application to quality and safety improvement challenges in health care.

HQ 6204. Health Care Quality Analysis. 3 Credits.

Application of measurement, data management and statistical analysis principles to quality improvement and patient safety challenges. Focus on the importance and design of effective measures and the selection of appropriate analysis tools.

HQ 6205. Patient Safety Systems. 3 Credits.

An examination of the epidemiology and sources of error in health care, risk assessment, and the design of processes and systems to improve patient safety. Focus on the application of process and technology-based systems to reduce the incidence of error.

HQ 6275. Leadership and Change. 3 Credits.

A capstone course focusing on the concept of leading change within the contexts of health professionals, health systems, and health policy. Organizational, management, and change theories as well as characteristics of personal and professional change leadership are explored in relation to expectations for successful executive leadership and performance in today's dynamic health care environments.

HEALTH CARE SCIENCE (HCS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HCS 0982. Continuous Enrollment. 3 Credits.

HCS 0985. GWU/GMU Joint NP/MSN Program. 1-12 Credits.

HCS 1011. Applied Anatomy & Physiology. 4 Credits.

HCS 1012. Mathematics-Health Providers. 2 Credits.

HCS 2100. Clinical Medicine Review. 5 Credits.

HCS 2101. Environmental Biostatistics. 3 Credits.

HCS 2102. Food and Water Sanitation. 3 Credits.

HCS 2103. Academic Curriculum Tutorial. 1-12 Credits.

HCS 2135. Clinical Assessment II. 4 Credits.

HCS 2140. Clinical Decision Making. 2 Credits.

HCS 2153. Gynecology Outpatient: NP's. 1-12 Credits.

HCS 2154. Clinical Geriatrics. 1-12 Credits.

HCS 2158. Cardiothoracic Med Elect-PA's. 4 Credits.

HCS 2159. Dermatology Elective for PA's. 4 Credits.

HCS 2160. Medical Inpatient. 5 Credits.

HCS 2161. Sports Medicine for PA's. 1-12 Credits.

HCS 2163. Medical Outpatient. 1-12 Credits.

HCS 2166. Surgical Inpatient. 1-12 Credits.

HCS 2168. Urology. 2 Credits.

HCS 2169. Obstetrics and Gynecology. 1-12 Credits.

HCS 2172. Pediatric Outpatient. 1-12 Credits.

HCS 2173. Spec Proj Elect-PA/MPH Studnts. 4 Credits.

HCS 2175. Primary Care Preceptorship. 1-12 Credits.

HCS 2176. EMed Elective For PA's. 4 Credits.

HCS 2177. General Med Elective for PA's. 4-6 Credits.

HCS 2178. Emergency Medicine. 1-12 Credits.

HCS 2180. Practicum-Environmental Health. 7 Credits.

HCS 2186. Orthopaedics Elective for PA's. 4 Credits.

HCS 2187. Radiology Elective for PA's. 4 Credits.

HCS 2188. Shock Trauma Elective for PA's. 4 Credits.

HCS 2189. Alcohol Rehabilitation Unit. 2 Credits.

HCS 2190. Dermatology. 1,2 Credit.

HCS 2191. Eye, Ear, Nose, and Throat. 4 Credits.

HCS 2192. Orthopaedics. 4 Credits.

HCS 2194. Pract-Gerontlgy/Geriatric Care. 1-12 Credits.

HCS 2195. Ophthalmology. 4 Credits.

HCS 2197. Current Topics in Bioethics. 1 Credit.

HCS 2198. Psychiatry. 4 Credits.
HCS 4199. Independent Study. 1-12 Credits.
HCS 6201. Practicum in Geriatric Care. 1 Credit.
HCS 6202. Introduction to Health Policy. 1 Credit.
HCS 6203. Spirituality,Healing,Art-Med. 1 Credit.
HCS 6208. Clinical Exp-Urban Health Care. 1 Credit.
HCS 6228. Preclin Prim Care Apprenticshp. 2 Credits.
HCS 6230. Stat Applctns for Health Prof. 3 Credits.
HCS 6231. Research Design. 3 Credits.
HCS 6232. Methods-Reading Medical Lit. 1 Credit.
HCS 6233. Epidemiolgy/Med Decision Makng. 1 Credit.
HCS 6274. Graduate Clinical Practicum. 3 Credits.
HCS 6502. Organztn/Financing-Health Care. 3 Credits.
HCS 6504. Med Law-the Attendng Physician. 3 Credits.
HCS 6505. Biomedical Ethics. 5 Credits.
HCS 6506. Medical Humanities. 1-12 Credits.
HCS 8360. Family Practice Preceptorship. 1-12 Credits.
HCS 8361. Rural Family Practice Preceptr. 1-12 Credits.
HCS 8362. Rural Family Practice Preceptr. 1-12 Credits.
HCS 8369. Issues in Health Care. 2 Credits.
HCS 8390. Extramural HCS Elective. 1-12 Credits.
HCS 8391. Extramural HCS Elective. 1-12 Credits.
HCS 8392. Extramural HCS Elective. 1-12 Credits.
HCS 8393. Extramural HCS Elective. 1-12 Credits.
HCS 8394. Extramural HCS Elective. 1-12 Credits.

HEALTH SCIENCES PROGRAMS (HSCI)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HSCI 2100. Writing and Composition in the Health Sciences. 3 Credits.

Basic writing mechanics and methods for developing paragraphs and essays; conceptualizing papers, such as crafting outlines and assessing sources; and basics of APA style. Students practice analyzing writing through peer review exercises. (Fall, spring, and summer).

HSCI 2101. Psychosocial Aspects of Health and Illness. 3 Credits.

Comprehensive introduction to the psychological and social aspects of health and wellness. Emphasis on the development of communication skills and the establishment of caring relationships. Discussions of special situations such as working with dying patients and patients with self-destructive behaviors.

HSCI 2102. Pathophysiology. 3 Credits.

Biomedical and scientific framework for the understanding of human disease mechanisms and biologic processes. Overview of infectious, immunologic, cardiovascular, genetic, respiratory, gastrointestinal, neoplastic, reproductive, renal, hematologic, neurologic, and musculoskeletal diseases.

HSCI 2103. Health Policy and the Health Care System. 3 Credits.

Incorporates economic theory and policy analysis methodology to analyze the impact of changes in the health care system on the practice of health sciences professionals and the quality and process of health care. Development of critical thinking skills through review of current medical literature.

HSCI 2104. Management of Health Science Services. 3 Credits.

Application of management and organizational principles to the delivery of services provided by health sciences disciplines. Issues addressed include information systems, leadership, team building, fiscal management, human resources management, quality improvement, and management of conflict and change.

HSCI 2105. Current Issus in Bioethics. 3 Credits.

Basic issues, approaches, and requirements of ethically acceptable decision making with patients, including patient confidentiality, conflicts of interest, allocation of scarce resources, occupational risks in health care, and professional responsibility for overall quality of care.

HSCI 2107. Health Care in Literature. 3 Credits.

HSCI 2108. QualityImprovement/HealthCare. 3 Credits.

Analysis of the structures in place to enhance the quality of health care delivery and political and economic influences that affect quality improvement programs. Assessment of specific interventions to enhance health care from the perspectives of providers and patients.

HSCI 2109. Trends&Innovations/HealthCare. 3 Credits.

Examination of new technologies, health care delivery models, and the phenomenon of sophisticated consumers. Assessment of the impact of science, technology, ethics, and government on the provision of health care.

HSCI 2110. Disease Prev/Health Promotion. 3 Credits.

An overview of basic public health concepts for health sciences students, including epidemiology, health promotion, and disease prevention. Review of current issues in health promotion. Completion of a public health project in a clinical site.

HSCI 2111. Dev/Health Care Professions. 3 Credits.

Students will analyze the history and evolution of health care professions, and compare them to general changes in science and culture. Students will compare and contrast how the evolution of health care professions has changed practice and informed how we may view clinical practice in the future.

HSCI 2112. Writing in the Health Sciences. 3 Credits.

Introduction to the health sciences literature. Emphasis is on construction, evaluation and organization of written communication of health sciences information.

HSCI 2112W. Writing in the Health Sciences. 3 Credits.**HSCI 2113. Informatics in the HSci. 3 Credits.**

Introduction to healthcare informatics, including management and clinical information systems and their role in administration, clinical, and research arenas in health care.

HSCI 2114. Healthcare/Developing Nations. 3 Credits.

An introduction to health concerns in the developing world. Students will explore interventional approaches for such issues as malaria, HIV/AIDS, clean water, maternal and women's health, and childhood mortality.

HSCI 2115. Intro Biostatistics-Health Sci. 3 Credits.

Basic concepts of biostatistics with application to the health sciences professions. Research design, frequency distributions, descriptive measures, probability, sampling, regression and correlation, analysis of variance, hypothesis development/testing and data organization/analysis options are covered.

HSCI 2130. Primary Care Skills Practicum. 2 Credits.**HSCI 2131. Adult Primary Care Practicum. 3 Credits.****HSCI 2132. Primary Care Mental Hlth Pract. 2 Credits.****HSCI 2133. Specialized Clinicl Experience. 2 Credits.****HSCI 2190. Independnt Study-Clin Hlth Sci. 1-12 Credits.**

Independent study and special projects involving student-defined learning objectives. Students must get permission of the faculty member who will direct the study.

HSCI 2195. Special Topics in Health Sci.. 1-3 Credits.**HSCI 3101. General Chemistry I. 4 Credits.**

Introduction to physical and inorganic chemistry. Topics include atomic structure, chemical bonding, common types of reactions, stoichiometry, thermochemistry and the properties of gases, liquids, and solids. Didactic lectures augmented by a corresponding hands-on laboratory component. (Summer).

HSCI 3102. General Chemistry II. 4 Credits.

Continuation of HSCI 3101 General Chemistry I. Topics include kinetics, equilibrium, acid-base chemistry, precipitation reactions, coordination chemistry, thermodynamics, and electrochemistry. Didactic lectures augmented by a corresponding hands-on laboratory component. (Summer).

HSCI 3103. Organic Chemistry I. 4 Credits.

Introduction to synthetic organic chemistry through exploration of the reactivity and potential biological activity of chemicals with different functional groups. Didactic lectures augmented by a corresponding hands-on laboratory component. (Fall).

HSCI 3104. Organic Chemistry II. 4 Credits.

Continuation of HSCI 3103 Organic Chemistry I. Reactions combined in a step-wise process, enabling creation of complex and interesting organic molecules. Spectroscopic methods used to determine organic structures; combined with chemical observations, allowing the deduction of structures of increasingly complex substances. Examination of the chemistry of biologically important macromolecules. Didactic lectures augmented by a corresponding hands-on laboratory component. (Spring).

HSCI 3116. Genome-BasedMed&Pharmacology. 3 Credits.**HSCI 3201. Biology I. 4 Credits.**

A foundation in biological chemistry, cell biology, and genetics. Didactic lectures augmented by a corresponding hands-on laboratory component. (Fall).

HSCI 3202. Biology II. 4 Credits.

Biological evolution, biological diversity (microbes, plants, and animals), animal physiology, and ecology. Didactic lectures augmented by a corresponding hands-on laboratory component. (Spring).

HSCI 3301. Physics I. 4 Credits.

Classical physics, including mechanics, Newton's laws of motion, force, gravitation, equilibrium, work and energy, momentum, and rotational motion; periodic motion, waves, and sound; heat and thermodynamics. Didactic lectures augmented by a corresponding hands-on laboratory component. (Fall).

HSCI 3302. Physics II. 4 Credits.

Continuation of HSCI 3301 Physics I, including electrostatics, electromagnetism, direct and alternating current circuits, and electromagnetic radiation; geometrical and physical optics; special relativity; quantum theory; atomic physics; nuclear physics; particle physics; astrophysics and cosmology. Didactic lectures augmented by a corresponding hands-on laboratory component. (Spring).

HSCI 4102. HumanPhysiology/ExtremeEnviro. 3 Credits.

The course examines human physiology and the pathophysiology of acute illnesses and injuries, and evaluates appropriate mitigation strategies associated with living and working in extreme environments.

HSCI 4103. Health Care Law/Regulation. 3 Credits.**HSCI 4105. Case Studies in Health Care. 3 Credits.**

HSCI 4106. Intro to Epidemiology for HS. 3 Credits.

An introduction to epidemiological methods and their applications in the prevention and control of illness, community and clinical interventions, and health services.

HSCI 4112. Rsrch/Wrtng in Health Sciences. 3 Credits.**HSCI 4112W. Rsrch/Wrtng in Health Sciences. 3 Credits.****HSCI 4198. Mentored Res. I. 3 Credits.****HSCI 4199. Mentored Res. II. 3 Credits.****HSCI 6212. Teaching Strategies in the Health Professions. 3 Credits.**

Teaching skills pertinent to the delivery of education in health professions. Course design illustrates teaching and learning practices grounded in andragogy, contributing to curriculum program objectives of enhancing teaching skills. (Same as EHS 6212, OT 8212) (Fall, spring, and summer).

HSCI 6213. Curriculum Development in the Health Professions. 3 Credits.

Curriculum development and assessment skills in the health professions. Variables that affect the manner in which individuals learn and interact within professions and organizations. (Same as EHS 6213) (Fall, spring, and summer).

HSCI 6223. Topics -Health Care Leadership. 3 Credits.

Theories and styles of leadership, including organizational management and values, strategic planning, communication strategies, managing change, and negotiating conflict in the context of the health care delivery system.

HSCI 6231. Advanced Pediatric Hlth Needs. 3 Credits.

Service delivery to children with disabilities from infancy through early schooling. Emphasis on learning disabilities, ADHD, sensory processing disabilities, and intellectual disabilities with co-occurring developmental and emotional disorders. Special e.

HSCI 6233. Pathology-Hlth Sci Students I. 1 Credit.**HSCI 6234. Pathology-Hlth Sci Students II. 3 Credits.**

Basic concepts and language of pathology, infectious diseases, and fundamental disease processes. Emphasis on pathogenesis and dynamics of disease. Causation, evolution, and morphology of pathological changes in the principal diseases of each organ system.

HSCI 6240. Issues & Trends in Health Syst. 3 Credits.

Analysis of key contemporary issues in U.S. health and social policy that affect the design and structure of the health care system. The health policy process and initiatives that shape care delivery.

HSCI 6241. The Health Care Enterprise. 3 Credits.

An overview of global business principles related to health care systems: the management of patient-centered care delivery, marketing, finance and fiscal management principles, information technology, and quality improvement.

HSCI 6261. Fdtn in Clinical/Trans.Rsrch. 3 Credits.

Overview and analysis of the translational research principles and practice through the application of basic, clinical, community health and health services research concepts.

HSCI 6262. Transdisciplinary Sem/Pract.. 3 Credits.

Transdisciplinary analysis of key translational research concepts delivered in a practicum and workshop framework. Individualized experiential practicum to address educational and experiential gaps.

HSCI 6263. Biostatistics Transl Research. 3 Credits.

Basic concepts and methods of biostatistics applied to translational research. Topics include distributions, populations and sample selection, variables, interaction and confounding, hypothesis formulation, correlation, t-tests, ANOVA, regression, and ch.

HSCI 6264. Epidemiology Translational Res. 3 Credits.

Basic concepts and methods of epidemiology and their application in measuring, studying and improving the health of populations applied to applications for translational research.

HSCI 6265. Grantsmanship in Trans Res. 3 Credits.

Writing grant proposals to fund clinical research, with an emphasis on translational research proposals. Emphasis is on persuasive communication, conceptually based hypotheses and research methods and the grant application process, including communicating.

HSCI 6270. Resear Meth Hlth Prof I. 3 Credits.

Methodological issues of basic, applied, and clinical research. Students develop the knowledge and skills to critically appraise and synthesize research results, analyze qualitative and quantitative data, evaluate evidence-based methods, develop research questions, and identify appropriate inquiry methodologies. Students become familiar with all elements of a research proposal, including those relating to the use of human subjects and informed consent.

HSCI 6271. Rsch Meth Hlth Prof II. 3 Credits.

Methodological issues of basic, applied, and clinical research. Students develop the knowledge and skills to critically appraise and synthesize research results, analyze qualitative and quantitative data, evaluate evidence-based methods, develop research questions, and identify appropriate inquiry methodologies. Students become familiar with all elements of a research proposal, including those relating to the use of human subjects and informed consent.

HSCI 6272. Rsch Meth Health Prof III. 3 Credits.

Methodological issues of basic, applied, and clinical research. Students develop the knowledge and skills to critically appraise and synthesize research results, analyze qualitative and quantitative data, evaluate evidence-based methods, develop research.

HSCI 6273. Bioinformatics for Genomics. 3 Credits.

The bioinformatics tools for different analytical situations. Strengths and limitations of the most common bioinformatics strategies. Principally limited to analysis of genomic data, the course is planned to enable students to generalize the acquired knowledge and its underlying principles and techniques to other types of 'big data' applications for the purpose of interpretation of results. (Fall, spring, and summer).

HSCI 6275. Transdisciplinary Rsrch Prop.. 3 Credits.

The integration of competencies acquired throughout the program. The development and submission of a transdisciplinary research proposal that responds to a Call for Proposals from an external sponsor, such as the National Institutes of Health.

HSCI 6287. Biology of HIV/AIDS. 3 Credits.

The basic science, pathogenesis, natural history, and laboratory identification of the human immunodeficiency virus.

HSCI 6291. Advncd Topics/Health Sciences. 1-3 Credits.

Topics vary depending on current issues of interest and faculty availability. Open to undergraduates with permission of the instructor.

HSCI 6297. Indpendnt Study/Health Profess. 1-5 Credits.

Independent study involving analysis of a clinical topic, a patient education project, or an on-site mentored clinical research practicum.

HEALTH SERVICES MANAGEMENT AND LEADERSHIP (HSML)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HSML 6202. Intro/Health Services Delivery. 2 Credits.

Introduction to the systems that define and shape delivery of health services in the United States. Case studies and presentations on major issues develop an appreciation of dilemmas confronting policymakers, providers, and patients: balancing cost, quality and access. Access and disparity, health care professions, facilities, managed care organizations and government health care programs. Policy changes that have had major impact on American health care in the past century. Fall.

HSML 6203. Intro to Health Management. 2 Credits.

Introduction to management theory essential for those seeking mid- and senior-level management positions in organizations providing healthcare or public health services. Application of the problem-solving method; extensive use of cases. Fall.

HSML 6204. Quality&PerformanceImprovement. 2 Credits.

Theory of quality and performance improvement in health services organizations and systems. Emphasis on the Deming method of continuous quality improvement (CQI); Six Sigma; International Organization for Standardization (ISO) standards; Baldrige criteria; accreditation programs. Prerequisites: HSML 6203 Spring.

HSML 6206. QuanMethds&Epid/HealthServices. 3 Credits.

Application of epidemiology and analytical methods to improve population health, enhance decision-making, and introduce operations management. The concepts and procedures complement HSML courses for information management and finance. Prerequisites: 2 or 3 semester hours in introductory statistics. Fall.

HSML 6207. HealthServicesInfoApplications. 2 Credits.

Organization and management of information technology in modern healthcare organizations with an emphasis on the acute care hospital. Use of information technology in hospital clinical, support, and administrative departments. Fall.

HSML 6208. Medical Informatics. 2 Credits.

Comprehensive study of the role and impact of IT in health services organizations. Specific emphasis on the role IT plays from managerial and clinical perspectives. Topics include ROI, privacy, error reduction, change management, and decision support systems. Prerequisite: HSML 6207. Spring.

HSML 6209. Health Services Finance. 2 Credits.

Application of health finance theory to health services organizations and systems. Budgeting process, understanding profit and loss, managing resources including accounts receivable, labor and supplies. The budget as a tool for analyzing operational changes. Prerequisites: HSML 6209. Spring.

HSML 6210. Hlth Serv FinancI Applications. 2 Credits.

Application of health finance theory to health services organizations and systems. Budgeting process, understanding profit and loss, managing resources including accounts receivable, labor and supplies. The budget as a tool for analyzing operational changes. Prerequisites: HSML 6209. Spring.

HSML 6211. Health Economics. 2 Credits.

Economics of the health care sector. An economic analysis of public policy alternatives in the health industry. Roles of the physician, hospital, insurance, and other health care markets are examined. Fall.

HSML 6212. CommunityHealth Mgt & Advocacy. 2 Credits.
Concepts and techniques to planning, managing, and advocating for community health programs and services. Focus on social contract, the Precede-Proceed Model and principles of community-oriented primary care. Students will study or conduct a community health promotion project. Prerequisites: HSML 6202 and 6203. Spring.

HSML 6213. HealthServicesMrktng&Planning. 2 Credits.
Concepts of planning and marketing as they apply to health services organizations. Particular emphasis on uses of planning and marketing techniques in managing departments and individual health services programs. Prerequisites: HSML 6204 and 6212. Fall.

HSML 6215. Health Law for Managers. 2 Credits.
Sources of law and legal processes affecting health services. Administrative law and agency processes. Legal aspects of torts and contracts for physicians, staff, patients, and health services organizations and systems. Trends in health services law. Prerequisites: HSML 6202 and 6203. Spring.

HSML 6216. HumanResourcesMgt&OrgBehavior. 2 Credits.
Theory and application of human behavior, human resource management, and labor relations policies, concepts and practices as they affect health services organizations. Primary focus is on managing people at work and developing management skills. Prerequisites: HSML 6202 and 6203.

HSML 6218. Sem-HlthServicesMgt&Leadership. 2 Credits.
Intensive qualitative and quantitative analyses of major problem areas in health system administration and planning using the case study method. Cases cover the broad spectrum of health policy, planning and management of the health services system. Serves as the capstone course for health services students. Taken in the last semester on campus. Spring.

HSML 6221. TransLdrshp/HealthServDelivery. 2 Credits.
Current leadership thought and competencies focusing on leadership styles, motivation, change management, innovation, creativity, emotional intelligence, organizational learning, and corporate culture. Prerequisite: HSML 6203. Spring.

HSML 6222. GroupLdrshp&TeamFacilitation. 2 Credits.
Applies management and leadership theory to small groups, e.g. committees, patient care teams, process improvement groups, task forces, etc. Methods to establish, organize, develop, and manage teams for problem-solving. Students are assigned to interdisciplinary teams as facilitators and receive feedback on their performance. Part of medical Center's service learning program—ISCOPES (Interdisciplinary Student Community-Oriented Prevention Enhancement Service). Prerequisites: HSML 6204, 6212 or equivalent. Fall.

HSML 6231. Management-Acute Care Hospital. 2 Credits.
Organizing and managing acute care hospitals. Relationships and procedures of clinical, support, and administrative departments. Process analyses and applications of the Deming method of continuous quality improvement. Requirements of the Joint Commission on Accreditation of Healthcare Organizations. Prerequisite: HSML 6202, 6204, and 6209 or instructor's permission. Spring.

HSML 6232. Institution & Systems Mgt Apps. 2 Credits.
Readings and guest speakers. Focus on management theory applied in freestanding and multi-institutional health services units. Lessons learned by health services executives are shown through vignettes and presentation of experiences. Seminar Format. Prerequisites: HSML 6202 and 6203, or instructor's permission.

HSML 6233. Delivery-Behav Health Services. 2 Credits.
Study of the organizations and systems to deliver behavioral health services; emphasis on organizing, managing, and financing treatment and rehabilitation facilities. Prerequisites: HSML 6202, 6204, and 6209. Fall.

HSML 6234. Physician Practice Management. 2 Credits.
Theory and principles of practice management. Emphasis on the fundamentals of organizing, staffing, and controlling a physician practice. Financial applications and resource consumption. Prerequisites: HSML 6202, 6204, and 6209. Spring.

HSML 6236. Aging&Disability:Needs&Srvcs. 3 Credits.
Problems of aging and disabilities including social, psychological, biological, economic, and health services needs. Theory and research explore attitudes and behaviors based on contact with older and/or disabled persons. Delivery of informal and social services to aged and disabled persons. Fall.

HSML 6237. Managing/SkilledNursngFacility. 3 Credits.
Organizing, financing, and managing the skilled nursing facility. Determining residents' needs and developing appropriate services. Accreditation Standards. Government regulations and licensing requirements. Prerequisites: HSML 6202, 6204, 6209, and 6236. Fall.

HSML 6238. Ambulatory Care Management. 2 Credits.
Organizing and managing ambulatory care. Models, financing, institutional affiliations, estimating and planning for ambulatory care, and using medical group practice as part of comprehensive services delivery. Prerequisites: HSML 6202, 6204, and 6209.

HSML 6239. Managed Care. 2 Credits.

Health maintenance organizations (HMOs), preferred provider organizations (PPOs), and utilization management (UM) in fee-for-service plans. Formation, organization, contractual arrangements, and medical management of managed care regarding costs, utilization, quality, and access are analyzed from the perspectives of managed care organizations, employers, providers, and public policy. Role of government in managed care, competition and marketing of managed care plans, and relationships between plans and providers. Efficacy of managed care in public and private sectors is explored. Prerequisites: HSML 6202, 6204, and 6209. Fall.

HSML 6241. Cmpl&RiskMgt/HlthSrvcsDelivery. 2 Credits.

Application of concepts and techniques for organizing and implementing compliance, risk management, and patient safety programs within the context of quality and performance improvement. Emphasis on organizational values as a condition to success. Recent compliance requirements will be addressed (e.g., HIPAA). Prerequisites: HSML 6202 and 6203, or equivalent. Fall.

HSML 6244. SupplyChainMgt/HealthServices. 2 Credits.

Theory and application of distribution management of materials, services, and information in health services organizations. Suppliers, inventory control, negotiating and managing contracts, joint and shared purchasing. Prerequisites: HSML 6204 and 6206. Spring.

HSML 6245. DisasterMgmtforHealthcareOrgs. 2 Credits.

The role and importance of healthcare organizations in all four phases of the disaster management life cycle (i.e., preparedness, mitigations, response, and recovery).

HSML 6246. Service Line & Project Mgt. 2 Credits.

Theory and application of management science techniques to manage and improve effectiveness of service lines, programs, and projects in health services. Business case development, planning, project management tools, and program evaluation. Prerequisite: HSML 6204. Spring.

HSML 6247. Consulting in Health Care. 2 Credits.

Theory and practice of healthcare consulting – what it is, how it is practiced, how it operates as a business, and concepts of “best practices.” Prerequisites: HSML 6202 and 6203, or permission of the instructor. Fall.

HSML 6254. Sem:Ethics-Health Services Mgt. 2 Credits.

Managerial implications of ethical issues in health services delivery: administrative and institutional ethics; professional codes; conflicts of interest, impaired professionals, end-of-life decisions, experimentation, and new technology; resource allocation. Fall.

HSML 6263. Health Services Financial Mgt. 2 Credits.

Economic concepts and the role of government and public health programs. Areas of focus include health services financing, reimbursement, and current issues related to changes in the health care system. Fall.

HSML 6264. Healthcare Mgmt & Strategy. 5 Credits.

This course provides a detailed examination of the core principles of management and strategy that are required by persons holding management and leadership roles in healthcare delivery organizations. (Fall, spring, and summer).

HSML 6270. Research-Health Services Admin. 2,3 Credits.

Field research. Primarily for advanced students; open to others with consent of instructor. May be repeated for credit. Fall, Spring.

HSML 6271. Field Problem Studies. 3 Credits.

Work experience guided by a qualified preceptor on selected management and planning issues and problems occurring in health services facilities, programs, and agencies. Primarily for advanced master’s and doctoral students; open to other students by arrangement. May be repeated for credit. Fall, Spring, Summer.

HSML 6273. Residency. 3 Credits.

Work experience guided by a qualified preceptor; periodic written progress reports and a written major report or selected field projects as required. Fall, Spring, Summer.

HSML 6274. Residency. 3 Credits.

Work experience guided by a qualified preceptor; periodic written progress reports and a written major report or selected field projects as required. Fall, Spring, Summer.

HSML 6275. Residency. 3 Credits.

Work experience guided by a qualified preceptor; periodic written progress reports and a written major report or selected field projects as required. Fall, Spring, Summer.

HSML 6285. Readings-Health Services Mgt. 3 Credits.

Supervised readings in special areas of health services management. Primarily for advanced students; open to others by arrangement. May be repeated for credit. Fall, Spring, Summer.

HSML 6286. Readings-Health Services Mgt. 3 Credits.

Supervised readings in special areas of health services management. Primarily for advanced students; open to others by arrangement. May be repeated for credit. Fall, Spring, Summer.

HSML 6299. Topics in HSML. 1-3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated for credit. Fall, Spring, Summer.

HEALTH AND WELLNESS (HLWL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master’s, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HLWL 1101. Special Topics. 1-3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

HLWL 1102. Stress Management. 3 Credits.

A holistic view of stress management, including mind, body, spirit, and emotions. The dominant stressors and how they affect health and wellness.

HLWL 1103. Issues in Men's Health. 3 Credits.

Issues in men's health ranging from the physical and emotional to the spiritual and occupational.

HLWL 1104. Outdoor and Environmental Education. 3 Credits.

A conceptual and experiential introduction to outdoor education, environmental education, wilderness travel, and outdoor leadership.

HLWL 1105. Yoga & the Meaning of Life. 3 Credits.

The historical teachings that have contributed to the physical, psychological, and spiritual practices of yoga.

HLWL 1106. Drug Awareness. 3 Credits.

Analysis of the complex role that drugs play in contemporary society and the ethical, legal, socioeconomic, and health issues that surround their therapeutic and recreational use.

HLWL 1108. Weight and Society. 3 Credits.

Background and concepts of body dissatisfaction, disordered eating, food preoccupation, and exercise obsession.

HLWL 1108W. Weight and Society. 3 Credits.

Background and concepts of body dissatisfaction, disordered eating, food preoccupation, and exercise obsession.

HLWL 1109. Human Sexuality. 3 Credits.

Biological and developmental aspects of human sexuality; psychological and emotional aspects of sexual behavior; sexual identity; social forces affecting sexual issues; and research trends in the area of human sexuality.

HLWL 1110. Issues in Alternative Medicine. 3 Credits.

Various modalities of alternative/complementary/integrative therapy. Critical analysis and evaluation of the many dimensions of these approaches.

HLWL 1111. Sport and the Law. 3 Credits.

Basic principles of the law as it applies to amateur and professional sports. Legal issues and their ramifications.

HLWL 1112. Issues in Women's Health. 3 Credits.

An introduction to health promotion and disease prevention pertaining especially to diseases, disorders, and conditions that are more prevalent among or unique to women or for which risk factors or interventions may differ for women and men. Topics are covered from epidemiological, sociocultural, historical, and behavioral perspectives.

HLWL 1114. Personal Health and Wellness. 3 Credits.

A survey of the various components involved in personal health and wellness, such as personal fitness, sexuality, mental health, and environmental health. Emphasis is on application of knowledge through the use of decision-making and behavior modification skills.

HLWL 1116. Lifestyle Nutrition. 3 Credits.

An introduction to nutrition that enables the student to make healthful food choices to enhance quality of life and prevention of chronic disease. Topics may include label reading, vegetarian diets, eating for exercise, and interpreting nutrient recommendations.

HLWL 1117. Functional Fitness. 3 Credits.

Core elements of personal fitness as applied to daily life. Emphasis on the development of functional fitness skills that can be practiced both in and out of the classroom.

HEBREW (HEBR)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HEBR 1001. Beginning Hebrew I. 4 Credits.

An active presentation of Hebrew as it is spoken and written today. Comprehension, speaking, reading, and writing skills are stressed. Laboratory fee.

HEBR 1002. Beginning Hebrew II. 4 Credits.

Continuation of HEBR 1001. An active presentation of Hebrew as it is spoken and written today. Comprehension, speaking, reading, and writing skills are stressed. Laboratory fee.

HEBR 2001. Intermediate Hebrew I. 4 Credits.

Further development of skills in speaking, reading, writing, and comprehension of modern Hebrew. Texts range from Israeli newspaper items to selections from classical materials. Prerequisite: HEBR 1001- HEBR 1002 . Laboratory fee.

HEBR 2002. Intermediate Hebrew II. 4 Credits.

Continuation of HEBR 2001. Further development of skills in speaking, reading, writing, and comprehension of modern Hebrew. Texts range from Israeli newspaper items to selections from classical materials. Prerequisite: HEBR 1001- HEBR 1002 . Laboratory fee.

HEBR 3001. Hebrew Conversation and Writing. 3 Credits.

Reading and writing at the intermediate to mid-high level, with stress on conversation and oral comprehension. Contemporary cultural and social aspects presented through selections from nonfiction and short fiction, films, and TV programs. Prerequisite: HEBR 2002 or permission of instructor.

HEBR 3101. Modern Hebrew Literary Classics. 3 Credits.

Prose and poetry of a century of writing from the beginning of the Hebrew literary renaissance to contemporary Israeli literature, including works of Bialik, Agnon, Hazaz, Amichai, Oz, and Yehoshua. Discussions stress historical development and authors' treatments of tradition and modernity.

HEBR 3102. Israeli Society and Culture: Literary Perspectives. 3 Credits.

A study of literature reflecting such contemporary issues as the conflict between the "builders' generation" and their children; the cultural contacts of Ashkenazim and Sefardim; image of the Arab; impact of the Holocaust; Zionist ideals and current realities.

HEBR 3103. Israeli Cinema (in English). 3 Credits.

Film considered as both an artistic and a historical medium that reflects and comments on the history, politics, and culture of Israel. The kinds of issues that Israeli films raise and the cinematic style that distinguishes them.

HEBR 3105. Special Topics. 3 Credits.**HEBR 3301. Modern Hebrew Fiction. 3 Credits.**

Study of selected modern Israeli short stories and poems. Prerequisite: HEBR 3001 or permission of instructor.

HEBR 3301W. Modern Hebrew Fiction. 3 Credits.

Study of selected modern Israeli short stories and poems. Prerequisite: HEBR 3001 or permission of instructor.

HEBR 3302. The Israeli Media. 3 Credits.

Explores the Israeli press, television and radio news broadcasts in Hebrew; focuses on developing increasing proficiency in reading and aural comprehension through class discussions and written assignments in Hebrew. Prerequisite: HEBR 3001 or permission of instructor.

HEBR 3302W. The Israeli Media. 3 Credits.

Explores the Israeli press, television and radio news broadcasts in Hebrew; focuses on developing increasing proficiency in reading and aural comprehension through class discussions and written assignments in Hebrew. Prerequisite: HEBR 3001 or permission of instructor.

HEBR 4001. Advanced Hebrew Literature I. 3 Credits.

Selections from Hebrew literature throughout the ages: Bible, Rabbinics, medieval Hebrew literature; classical motifs in modern Israeli literature. Literary analysis (writing and discussion) in Hebrew. Prerequisite: HEBR 3301 or permission of instructor.

HEBR 4001W. Advanced Hebrew Literature I. 3 Credits.

Selections from Hebrew literature throughout the ages: Bible, Rabbinics, medieval Hebrew literature; classical motifs in modern Israeli literature. Literary analysis (writing and discussion) in Hebrew. Prerequisite: HEBR 3301 or permission of instructor.

HEBR 4002. Advanced Hebrew Literature II. 3 Credits.

Continuation of HEBR 4001. Selections from Hebrew literature throughout the ages: Bible, Rabbinics, medieval Hebrew literature; classical motifs in modern Israeli literature. Literary analysis (writing and discussion) in Hebrew. Prerequisite: HEBR 3301 or permission of instructor.

HISTORY (HIST)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HIST 1000. Dean's Seminar. 3 Credits.**HIST 1011. World History, 1500-Present. 3 Credits.**

An introduction to world history over the past half millennium, stressing themes of exchange and integration, tracing the ways various peoples of the world became bound together in a common system.

HIST 1020. Women in Western Civilization. 3 Credits.

Exploration of critical periods of intellectual and cultural change in Western societies as influenced by and affecting women. Examination of images of women and of changing ideal types of femininity and masculinity. Aspects of law, religion, art, culture, work, and politics in relation to these topics. Same as WSTU 1020.

HIST 1110. European Civilization in Its World Context. 3 Credits.

Introduction to the history of Europe, emphasizing primary sources and their interpretation. From the beginning of written culture through 1715.

HIST 1120. European Civilization in Its World Context. 3 Credits.

Continuation of HIST 1110. Introduction to the history of Europe, emphasizing primary sources and their interpretation. From 1715 to the present.

HIST 1120W. European Civ in World Context. 3 Credits.

HIST 1121. The War of Ideas in European and International History, 1750-Present. 0-3 Credits.

The ideas that made people fight, from the French Revolution to the worldwide uprisings of the 1960s and beyond. Key texts whose ideas of freedom and slavery, tradition and progress, state authority and revolutionary violence changed the world. The political, economic, and social contexts and effects of these texts.

HIST 1310. Introduction to American History. 3 Credits.

The political, social, economic, and cultural history of the United States. From the earliest settlements to 1876.

HIST 1311. Introduction to American History. 3 Credits.

Continuation of HIST 1310. The political, social, economic, and cultural history of the United States. From 1876 to present.

HIST 2005. Majors' Introductory Seminar. 0-3 Credits.

Required of history majors. Topics announced in the Schedule of Classes. Usually taken in the sophomore year. May not be repeated for credit.

HIST 2005W. Majors' Introductory Seminar. 0-3 Credits.

HIST 2010. Early American Cultural History. 3 Credits.

How culture was important in the creation of the United States—in its origins as a colonial outpost and its expansion across the continent; in its hierarchies and expressions of power, especially as organized by race, class, ethnicity, or gender; in the creation of democracy and the valuing of free expression; and in the development of cities and the varied uses of the countryside. Same as AMST 2010.

HIST 2011. Modern American Cultural History. 3 Credits.

The effects of culture in the shaping of the United States since 1876. The role of the mass media; effects of cultural conceptions on the physical landscape; changing ideas of race, ethnicity, gender, and sexuality; and the political meanings of cultural conflict. Transnational influences on U.S. culture and effects of U.S. culture abroad. Same as AMST 2011.

HIST 2020. Washington, D.C.: History, Culture, and Politics. 0-3 Credits.

Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same as AMST 2020.

HIST 2020W. Washington, D.C.: History, Culture, and Politics. 0-3 Credits.

Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same as AMST 2020.

HIST 2105. Majors' Introductory Seminar: Europe. 0-3 Credits.

HIST 2105W. Majors' Introductory Seminar: Europe. 0-3 Credits.

HIST 2112. Early Aegean and Greek Civilizations to 338 B.C.. 3 Credits.

Neolithic background; Bronze Age—Minoan, Helladic, and Mycenaean civilizations; classical Greek civilization to the Macedonian conquest. Same as CLAS 2112.

HIST 2113. The Roman World to 337 A.D.. 3 Credits.

Prehistoric Italy; rise and decline of the Roman Empire and Latin civilization; cultural, social, and political developments in the Greek world under Roman rule. Same as CLAS 2113.

HIST 2124. 19th-Century Europe. 3 Credits.

Exploration of primary source documents and works of professional historians to introduce important issues of 19th-century European history.

HIST 2125. 20th-Century Europe. 3 Credits.

Diplomatic, political, and cultural developments from the turn of the century to the present.

HIST 2131. History of England Since 1689. 3 Credits.

Development of English civilization and its impact on Western culture.

HIST 2141. History of France Since 1814. 3 Credits.

Breaks and continuities in the succession of regimes; the interplay between revolution and tradition; the weakened international position of France; Gaullism and the survival of France; European Unity.

HIST 2160. History of Germany. 3 Credits.

Political, social, and cultural development.

HIST 2305. Majors' Introductory Seminar: United States. 0-3 Credits.

HIST 2305W. Majors' Introductory Seminar: United States. 0-3 Credits.

HIST 2312. Civil War and Reconstruction. 3 Credits.

How tensions between the sections developed into violence, how a total war was fought on American soil, and how Reconstruction shaped the making of modern American politics and race relations.

HIST 2313. History of the American West. 3 Credits.

HIST 2320. U.S. Media and Cultural History. 3 Credits.

History and analysis of 20th-century U.S. media and culture, including the rise of consumer culture, film, and television. Racial, gendered, and national identities in the context of modernism, mass culture, and globalization. Same as AMST 2320.

HIST 2321. U.S. History, 1890-1945. 3 Credits.

Political, social, diplomatic, and intellectual developments, with particular emphasis on the "searching" '20s and New Deal.

HIST 2322. U.S. History since 1945. 3 Credits.

Political, social, diplomatic, and intellectual developments, with particular emphasis on the Cold War, "silent" '50s, and disrupted '60s.

HIST 2340. US Diplomatic History. 3 Credits.

American foreign relations in the 20th century.

HIST 2340W. US Diplomatic History. 3 Credits.

American foreign relations in the 20th century.

HIST 2350. U.S. Religion and Politics. 3 Credits.

How religion and politics have influenced each other in the United States and how Americans have understood those influences. Religious violence; conflicts between faith and science; religious factors in racial and gender politics; and the separation of church and state. Same as AMST 2350.

HIST 2380. Sexuality in US Cultural Hist. 3 Credits.

Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as AMST 2380/ WSTU 2380.

HIST 2410. 20th-Century U.S. Immigration. 3 Credits.

Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Same as AMST 2410.

HIST 2440. The American City. 3 Credits.

An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Same as AMST 2440.

HIST 2490. Themes in U.S. Cultural History. 3 Credits.

Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as AMST 2490.

HIST 2505. Majors' Introductory Seminar: Africa. 0-3 Credits.**HIST 2605. Majors' Introductory Seminar: Asia. 0-3 Credits.****HIST 2605W. Majors' Introductory Seminar: Asia. 0-3 Credits.****HIST 2705. Majors² Introductory Seminar: Latin America. 0-3 Credits.****HIST 2705W. Majors' Introductory Seminar: Latin America. 0-3 Credits.****HIST 2710. The United States in Global Context, 1898-Present. 0-3 Credits.**

How the 20th- and 21st-century U.S. has been engaged globally, both politically and culturally, with attention to global culture, transnational ideas and social movements, foreign policy, and economic transformations. Same as AMST 2710.

HIST 2730. World War II in History and Memory. 0-3 Credits.

Examination of Americans' histories and memories of World War II. Same as AMST 2730.

HIST 2730W. World War II History & Memory. 0-3 Credits.

Examination of Americans' histories and memories of World War II. Same as AMST 2730.

HIST 2803. The Ancient Near East and Egypt to 322 B.C.. 3 Credits.

Survey of Egyptian, Mesopotamian, Anatolian, West Semitic, and Iranian civilizations from the Neolithic period to Alexander's conquest. Same as Clas 2803.

HIST 2804. History of Ancient Israel. 3 Credits.

The history of ancient Israel from the Patriarchs through the Romans. Topics include historical, archeological, political, social, cultural, religious, diplomatic, military, economic, and intellectual events, movements, and relationships. Same as CLAS 2804.

HIST 2805. Majors' Introductory Seminar: Middle East. 0-3 Credits.**HIST 2805W. Majors' Introductory Seminar: Middle East. 3 Credits.****HIST 3001. Special Topics. 0-4 Credits.**

May be repeated for credit provided the topic differs.

HIST 3001W. Special Topics. 0-4 Credits.

May be repeated for credit provided the topic differs.

HIST 3030. Military History to 1860. 3 Credits.

Causes, conduct, and consequences of warfare in the West. To 1860.

HIST 3031. Military History since 1860. 3 Credits.

Continuation of HIST 3030. Causes, conduct, and consequences of warfare in the West. Since 1861.

HIST 3033. War and the Military in American Society from the Revolution to the Gulf War. 3 Credits.

Social and psychological dimensions of war and military service.

HIST 3035. The United States and the Wars in Indochina, 1945-1975. 3 Credits.

The American role in the Indochina Wars, emphasizing the period 1961-1975, and from the perspectives of the Vietnamese, French, and Americans in Vietnam. Related intellectual and political developments in the United States; Cold War relationships with China and the Soviet Union.

HIST 3038. Naval History to 1815. 3 Credits.

The age of sail—to 1815.

HIST 3039. Naval History since 1815. 3 Credits.

Continuation of HIST 3038. The age of steam and steel—since 1815.

HIST 3045. International History of the Cold War. 3 Credits.

Key events and themes of the Cold War, drawing on new evidence from U.S., Soviet, Chinese, German, East European, Vietnamese, Cuban, and other sources. Related historiographical controversies from multiple national perspectives. Why the Cold War began, why it lasted for 45 years, and why it ended.

HIST 3046. The Cold War in the Third World. 3 Credits.

The evolution of the Cold War in Asia, Africa, and Latin America. Decolonization and the response of the Great Powers, the political economy of the Third World, and American and Soviet interventions.

HIST 3047. Writing Cold War History. 3 Credits.

Seminar. Students prepare a research paper on selected topics in the history of the Cold War.

HIST 3047W. Writing Cold War History. 3 Credits.

Seminar. Students prepare a research paper on selected topics in the history of the Cold War.

HIST 3060. Modern Jewish History. 3 Credits.

A secular history of the Jewish people from the 18th century to the present state of Israel; emphasis on European and Middle Eastern political, economic, and cultural influences.

HIST 3061. The Holocaust. 3 Credits.

The origins, causes, and significance of the Nazi attempt to destroy European Jewry, within the context of European and Jewish history. Related themes include the behavior of perpetrators, victims, and bystanders; literary responses; contemporary implications of the Holocaust for religion and politics.

HIST 3095. Internship. 1-3 Credits.

Study of history through internships in museums, libraries, Congress, or other appropriate institutions and agencies. Prerequisite: approval of a departmental faculty member.

HIST 3097. Independent Study. 1-3 Credits.

Permission of instructor required.

HIST 3101. Topics: Europe. 0-3 Credits.**HIST 3101W. Topics: Europe. 3 Credits.****HIST 3103. European Intellectual History I. 3 Credits.**

The "Century of Genius" and the Enlightenment; God, nature, man, and society, from Descartes to the French Revolution.

HIST 3104. European Intellectual History II. 3 Credits.

Continuation of HIST 3103. Responses to the French Revolution and the Enlightenment; historicism, evolution; nihilism, psychoanalysis; communism; fascism; existentialism, structuralism, postmodernism, and neo-orthodoxy.

HIST 3104W. European Intellectual History II. 3 Credits.

Continuation of HIST 3103. Responses to the French Revolution and the Enlightenment; historicism, evolution; nihilism, psychoanalysis; communism; fascism; existentialism, structuralism, postmodernism, and neo-orthodoxy.

HIST 3111. Topics in Ancient History. 3 Credits.

May be repeated for credit provided the topic differs. Same as CLAS 3111.

HIST 3118. The Middle Ages: 500-1500. 3 Credits.

The evolution of European society from the end of the Roman Empire to the Renaissance. The nature of political power, role of religion, place of gender, cultural production, and changing social structures.

HIST 3126. European Integration: A History. 3 Credits.

An examination of the origins and development of the European Union.

HIST 3130. History of England I. 3 Credits.

Development of English civilization and its impact on Western culture. To 1689.

HIST 3132. Tudor England. 3 Credits.

Aspects of the constitutional, social, intellectual, economic, and religious development of England, 1485-1603.

HIST 3132W. Tudor England. 3 Credits.

Aspects of the constitutional, social, intellectual, economic, and religious development of England, 1485-1603.

HIST 3134. Stuart England. 3 Credits.

The civil wars, Restoration, and Glorious Revolution. Political, religious, socioeconomic, and intellectual developments in England, 1603-1714.

HIST 3135. Victorian Britain. 3 Credits.

Major themes in 19th-century British history: industrialism, democratization, urbanization, imperial expansion, class and gender schisms.

HIST 3137. The British Empire. 3 Credits.

The British Empire from its rise in the 17th century to its demise in the 20th century.

HIST 3139. Twentieth Century Britain. 3 Credits.

Major themes of 20th-century British history: industrial decline, imperialism and decolonization, the making of a welfare state, the cataclysm of global war, integration with Europe.

HIST 3139W. 20th-Century Britain. 3 Credits.

Major themes of 20th-century British history: industrial decline, imperialism and decolonization, the making of a welfare state, the cataclysm of global war, integration with Europe.

HIST 3140. History of France I. 3 Credits.

Old Regime: monarchy and social classes; the Church; the Enlightenment; the 1789 revolution; Napoleon.

HIST 3140W. History of France to 1814. 3 Credits.

Old Regime: monarchy and social classes; the Church; the Enlightenment; the 1789 revolution; Napoleon.

HIST 3145. The French Revolution. 3 Credits.

Social, political, economic, and cultural history of the decade of revolution, 1789-1799. Attention to its structural consequences in France and in Europe at large.

HIST 3145W. The French Revolution. 3 Credits.

Social, political, economic, and cultural history of the decade of revolution, 1789-1799. Attention to its structural consequences in France and in Europe at large.

HIST 3150. Spain and Its Empire, 1492-1700. 3 Credits.

Major transformations of the period: from cultural pluralism to ethnic homogeneity, from medieval fragmentation to imperial expansion in Europe and America; from religious reform to Catholic Reformation, from global dominance to decline.

HIST 3168. The Two Germanys and the Cold War. 3 Credits.

Why was Germany divided after World War II? Why did it stay divided for 45 years? How was it reunited in 1990? This course examines developments in East and West Germany, relations between the two Germanys during the Cold War, their foreign policies, and how other countries treated them.

HIST 3173. The Habsburgs in East Central Europe. 3 Credits.

History of the Habsburg monarchy in its East Central European context. Reformation and Counter-Reformation; conflict with the Ottoman Empire; great-power competition in Europe; response to the Enlightenment and the French Revolution; the rise of nationalism; and final dissolution in World War I.

HIST 3173W. The Habsburgs in East Central Europe. 3 Credits.

History of the Habsburg monarchy in its East Central European context. Reformation and Counter-Reformation; conflict with the Ottoman Empire; great-power competition in Europe; response to the Enlightenment and the French Revolution; the rise of nationalism; and final dissolution in World War I.

HIST 3178. The Making of the Modern Balkans. 3 Credits.

States of the Balkan peninsula—Slovenia, Croatia, Serbia and Montenegro, Bosnia, Albania, Macedonia, Greece, Bulgaria, and Romania—including developments since the decline of the Ottoman Empire and the emergence of Balkan nationalist movements, and continuing through the collapse of the Soviet bloc.

HIST 3180. Russia to 1801. 3 Credits.

Survey of Russian history from the rise of the Kievan confederation in the ninth century to the establishment of Imperial Russia as a European great power. Attention will be given to the political, socioeconomic, and cultural history of the East Slavs, especially the Russians.

HIST 3181. Russia Since 1801. 3 Credits.

Survey of Russian and Soviet history from the reign of Alexander I to the Stalin era. Attention will be given to the contending forces of revolution, reform, and conservatism; diplomatic relations; economic development; and social change.

HIST 3301. Topics: U.S. History. 0-3 Credits.**HIST 3301W. Topics: U.S. History. 3 Credits.****HIST 3302. America before 1764. 3 Credits.**

An examination of prehistory, colonization, and the shifting dynamics among European Americans, African Americans, and Native Americans before 1764.

HIST 3303. Revolutionary America. 3 Credits.

An examination of the War of Independence and other events that reshaped life for Native Americans, African Americans, and European Americans in the era of the American Revolution; emphasis on a continental approach to the period.

HIST 3304. George Washington and His World. 3 Credits.

George Washington's life as soldier, politician, entrepreneur, slave holder, and national icon. Emphasis on the interpretation of original sources, including historical documents and the material culture of Washington's Mount Vernon estate, with tours and lectures by curators and historians. Departmental permission is required for registration.

HIST 3311. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.

The period 1828-1850 and its continuing significance to American society; emphasis on national politics and the emerging sectional conflict.

HIST 3311W. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.

The period 1828-1850 and its continuing significance to American society; emphasis on national politics and the emerging sectional conflict.

HIST 3322. The Modern American Presidency. 3 Credits.

The development of the modern American presidency, from Theodore Roosevelt to Bill Clinton, examining the intersection of personal and impersonal forces in the creation of modern America.

HIST 3324. US Urban History. 3 Credits.

History of American urban life and culture from the colonial era to the present, focusing on transitions from pre-industrial to industrial and post-industrial forms. The social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as AMST 3324.

HIST 3332. History of American Foreign Policy Since World War II. 3 Credits.

Emphasis on American and Soviet strategy and foreign policy in the era of the Cold War. World War II to the Vietnam .

HIST 3333. History of American Foreign Policy Since World War II. 3 Credits.

Continuation of HIST 3332. Emphasis on American and Soviet strategy and foreign policy in the era of the Cold War. Vietnam to the "New World Order."

HIST 3334. The Nuclear Arms Race. 3 Credits.

Political, military, diplomatic, scientific, and cultural consequences of the advent of nuclear weapons. The development and uses of the atomic bomb during World War II and the course and legacy of the U.S.-Soviet nuclear arms race during the Cold War.

HIST 3351. US Social History. 3 Credits.

The urban-industrial era from 1861 to present. Same as AMST 3351.

HIST 3352. Women in the United States I. 3 Credits.

Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as AMST 3352/ WSTU 3352.

HIST 3352W. Women in the United States I. 3 Credits.

Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as AMST 3352/ WSTU 3352.

HIST 3353. Women in the United States II. 3 Credits.

Continuation of HIST 3352. Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as AMST 3353/ WSTU 3353.

HIST 3356. Epidemics in American History. 3 Credits.

(Fall and summer).

HIST 3360. African-American History to 1865. 3 Credits.

Survey of the African American experience, emphasizing the contributions of black Americans to and their impact upon American history. Same as AMST 3360.

HIST 3361. African-American History Since 1865. 3 Credits.

Continuation of HIST 3360. Survey of the African American experience, emphasizing the contributions of black Americans to and their impact upon American history. Same as AMST 3361.

HIST 3362. Black Women in U.S. History. 3 Credits.

Black Women from the Middle Passage to contemporary times. Same as AMST 3362/ WSTU 3362.

HIST 3362W. Black Women in U.S. History. 3 Credits.

Black Women from the Middle Passage to contemporary times. Same as AMST 3362/ WSTU 3362.

HIST 3363. Race, Medicine & Public Health. 3 Credits.

Issues of race, medicine, and public health. (Fall and spring).

HIST 3366. Immigration, Ethnicity, and the American Experience. 3 Credits.

Examination of the role of immigration, ethnicity, and ethnic conflict in American life, with particular attention to the urban immigrant experience from 1820 to 1924.

HIST 3366W. Immigration, Ethnicity, and the American Experience. 3 Credits.

Examination of the role of immigration, ethnicity, and ethnic conflict in American life, with particular attention to the urban immigrant experience from 1820 to 1924.

HIST 3367. History of the Jewish People in America. 3 Credits.

The study of the Jewish minority in America from colonial times to the present. Emphasis on the interaction between a powerful majority culture and that of protean minority people.

HIST 3370. US Constitutional History. 3 Credits.

Examination of the text and interpretation of the document that is the foundation of the American government, with special attention to the changing character of race and gender as constitutional classes.

HIST 3501. Topics: Africa. 0-3 Credits.

A survey of African history from 1880 to the present.

HIST 3510. African History to 1880. 3 Credits.

Survey of the history of the African continent with emphasis on the history of sub-Saharan Africa.

HIST 3520. Africans in the Making of the Atlantic World. 3 Credits.

The role of Africa and Africans in the Atlantic world with emphasis on links between Africa, Europe, and the Americas.

HIST 3530. Women in Africa. 3 Credits.

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Same as WSTU 3530.

HIST 3530W. Women in Africa. 3 Credits.

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Same as WSTU 3530.

HIST 3540. West Africa to Independence. 3 Credits.

A thematic survey of West African history, focusing on the diversity of African culture, West African kingdoms and empires, Islam, the trans-Saharan trade, African contact with Europe, slavery and the slave trade, and the colonization of Africa.

HIST 3601. Topics: Asian History. 0-3 Credits.**HIST 3610. China to 1800. 3 Credits.**

Survey of Chinese civilization from its ancient beginnings to the last imperial dynasty.

HIST 3611. History of Modern China. 3 Credits.

China since 1840, with particular attention to political developments.

HIST 3614. Writing Modern Chinese History. 3 Credits.

Seminar. Students prepare a research paper on selected topics in the history of modern China.

HIST 3614W. Writing Modern Chinese History. 3 Credits.

Seminar. Students prepare a research paper on selected topics in the history of modern China.

HIST 3615. History of Chinese Communism. 3 Credits.

Survey of the leadership, ideology, structure, and foreign and domestic policies of the Chinese Communist Party from its inception to the present.

HIST 3621. History of Modern Japan. 3 Credits.

Japan's century of modernization-from the Meiji Restoration of 1868 to the present. Emphasis on historical, political, economic, and cultural factors.

HIST 3630. History of Korea. 3 Credits.

An introduction to the history and culture of Korea from antiquity to the present.

HIST 3631. History of Modern Korea. 3 Credits.

Modern Korean history from 1876 to contemporary society. Emphasis on colonialism, nationalism, the division of peninsula, the Cold War, and globalization.

HIST 3640. History of Southeast Asia. 3 Credits.

An examination of Vietnam and its neighbors from the pre-colonial period to the present.

HIST 3650. Modern South Asia, 1750-Present. 3 Credits.

The South Asian subcontinent, including Afghanistan, Pakistan, India, and Bangladesh, since the mid-18th century. The period of British rule, from the late 18th to the mid-20th century. The different trajectories of the independent nation-states of South Asia following decolonization.

HIST 3701. Topics in Latin American History. 0-3 Credits.**HIST 3710. History of Latin America I. 3 Credits.**

Analysis of Spanish and Portuguese imperialism in the New World, 1492-1820.

HIST 3711. History of Latin America II. 3 Credits.

Continuation of HIST 3710. A problems approach to Latin America, 1820 to the present; thematic emphasis on neocolonialism, corporatism, liberalism, caudillismo, modernization, populism, and revolution.

HIST 3801. Topics in Middle Eastern History. 0-3 Credits.**HIST 3810. History of the Middle East to 1800. 3 Credits.**

Byzantine, Arab, Persian, and Islamic backgrounds; rise and decline of the Ottoman Empire; action of European powers in the area; Ottoman breakup into the Turkish Republic and other states.

HIST 3811. The Middle East in the 20th Century. 0-3 Credits.

The state system established after World War I. Effects of colonialism, the rise of nationalism, the Cold War, and the oil industry. The modes of identification that accompanied these processes, including pan-Arabism and Islamism.

HIST 3811W. Middle East in 20th Century. 0-3 Credits.

The state system established after World War I. Effects of colonialism, the rise of nationalism, the Cold War, and the oil industry. The modes of identification that accompanied these processes, including pan-Arabism and Islamism.

HIST 3820. The History of Israel. 3 Credits.

A history of Israel from the origins of Zionism and the British Mandate through the Oslo Accord and its legacy.

HIST 3820W. The History of Israel. 3 Credits.

A history of Israel from the origins of Zionism and the British Mandate through the Oslo Accord and its legacy.

HIST 3830. History of Iraq. 3 Credits.

Modern Iraq's Ottoman background; its incorporation into a world market dominated by Europe, British influence and preconceptions in the creation of Iraq, and the emergence and survival of the Ba'ath dictatorship. Reforms in economic, political, and educational spheres.

HIST 3840. History of Central Asia. 3 Credits.

Introduction to the political, cultural, religious, and social history of the region, including Afghanistan, Kazakhstan, Tajikistan, Turkmenistan, and Uzbekistan.

HIST 3850. Modern Iran. 3 Credits.

Political, diplomatic, religious, and other developments in Iran from about 1800 to 1989.

HIST 4098. Thesis Seminar. 3 Credits.

For history majors only. Preparation of a research paper using primary sources.

HIST 4098W. Thesis Seminar. 3 Credits.

For history majors only. Preparation of a research paper using primary sources.

HIST 4099. Senior Honors Thesis Tutorial. 3 Credits.

Required of and open only to undergraduate honors candidates in history. Prerequisite: permission of the thesis director must be obtained the semester before registration.

HIST 4099W. Senior Honors Thesis Tutorial. 3 Credits.

Required of and open only to undergraduate honors candidates in history. Prerequisite: permission of the thesis director must be obtained the semester before registration.

HIST 4135. Folger Seminar. 3 Credits.

The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as ENGL 4135/ FREN 4135.

HIST 5701W. Selected Topics. 0-4 Credits.**HIST 6001. Special Topics. 3-9 Credits.**

Open to doctoral and master's candidates and qualified undergraduates. May be repeated for credit provided the topic differs.

HIST 6005. History and Historians. 3 Credits.

Historiography and historical method for graduate students. Readings and discussions on major trends in history; selections from classics of historical literature.

HIST 6006. Teaching History. 3 Credits.

Pedagogic techniques and strategies particular to the discipline. Admission by permission of instructor.

HIST 6011. Rdg/Rsch:History/Public Policy. 3 Credits.

Seminar in the use of historical insights and methods in policymaking, with emphasis on domestic issues. Assessment and use of primary sources for policy analysis and the use of historical analogy in policy formulation.

HIST 6012. Internship in History and Public Policy. 3,6 Credits.

Supervised participation in an office or agency concerned with the formulation of public policy; terms of the internship are arranged with the director of the history and public policy program. Enrollment restricted to students in the history and public policy program.

HIST 6030. Uses of History in International Affairs. 3 Credits.

The multiple interconnections among history, politics, and international affairs, including how policymakers use or misuse "lessons" of history and how countries attempt to deal with difficult aspects of their past. Specific cases may vary.

HIST 6031. History of International Economic Systems. 3 Credits.

Development of arrangements and institutions designed to manage the international economy since the 19th century, with a focus on the period since World War II.

HIST 6032. Rdg/Rsch Sem:Strategy & Policy. 3 Credits.

A study of the historical development of strategy and the relationship of military thought to national policy.

HIST 6040. Topics in Modern Military and Naval History. 3 Credits.

Discussion, readings, and research in 20th-century European and American military and naval history.

HIST 6041. The Age of the Battleship: An Introduction to Modern Naval History. 3 Credits.

The rich and varied literature of naval history, with emphasis on interactions among technology, nationalism, and domestic political/social developments in the late 19th and early 20th century. The social history of navies is included.

HIST 6042. Seminar: World War II. 3 Credits.

Examination of statecraft and the management of force before, during, and after World War II. Special attention to broad aspects of military policy and strategy and their interaction with international politics and diplomacy.

HIST 6050. Modernization, Imperialism, Globalization. 3 Credits.

Readings seminar in classic and recent theories of modernization, imperialism, and globalization.

HIST 6051. Re-thinking Cold War History. 3 Credits.

A reading and research course that relies heavily on documents from formerly closed communist archives and recently declassified Western materials. Various issues and events of the Cold War; old and new historiographical controversies. Students write a primary-source research paper to elucidate one of the many aspects of the Cold War about which new evidence is available.

HIST 6097. Independent Readings/Research. 3 Credits.

Written permission of instructor required. May be repeated for credit with permission.

HIST 6101. Topics: Europe. 3 Credits.

HIST 6105. Sem:European Intellectual Hist. 3 Credits.

Topics in 18th- and 19th-century European thought, with an emphasis on France. Specific topic announced in the Schedule of Classes.

HIST 6120. Sem:Early Modern European Hist. 3 Credits.

Topics selected from Western European history of the 14th through 17th centuries.

HIST 6121. Rdg/Rsch Sem:Mod European Hist. 3 Credits.

HIST 6122. Rdg/Rsch Sem:20th C History. 3 Credits.

Research or readings on selected topics.

HIST 6128. Europe and the World, 1500-Present. 3 Credits.

An introduction to some of the key debates and scholarship concerning European imperialism.

HIST 6130. Early Modern Britain. 3 Credits.

Analysis of some current issues in early modern historiography; contextualization of recent works in the field; consideration of different methodologies and the types of evidence on which they rely or that they illuminate.

HIST 6133. English People and Institutions. 3 Credits.

Selected topics in the political, social, intellectual, and economic history of England. Focus upon one time period and special area of interest. May be taken for research credit with instructor's approval.

HIST 6135. British Imperialism. 3 Credits.

Research seminar. Major debates and schools of thought on the history of British imperialism.

HIST 6138. Folger Institute Seminars I. 3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the chair of the department before registration.

HIST 6139. Folger Institute Seminars II. 3 Credits.

Continuation of HIST 6138. Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the chair of the department before registration.

HIST 6170. Eastern European History I. 3 Credits.

1772-1918.

HIST 6171. Eastern European History II. 3 Credits.

Continuation of HIST 6170. 1919-1945.

HIST 6180. History of Modern Russia and the Soviet Union. 3 Credits.

Selected topics in the domestic history of modern Russia and Soviet Union. May be taken as a readings seminar or, with instructor's approval, as a research seminar.

HIST 6181. Research Seminar: Russian and Soviet Empires. 3 Credits.

HIST 6185. Sem: Russian & Soviet Thought. 3 Credits.

Selected topics in the intellectual and cultural history of 18th- to 20th-century Russia and Soviet Union. May be taken as a readings seminar or, with instructor's approval, as a research seminar. Admission by permission of instructor.

HIST 6188. Soviet Foreign Policy, 1917-1991. 3 Credits.

Concepts and perceptions guiding Soviet relations with the outside world. From the blockade and intervention, through years of isolation, World War II, the Cold War, to "peaceful coexistence."

HIST 6301. Topics: U.S. History. 3 Credits.

HIST 6302. Colonial North America. 3 Credits.

The complex and turbulent world of colonial North America from the late 16th to the late 18th century. Inter-cultural negotiations, Atlantic world connections, imperial conflict, gender construction, and race consciousness.

HIST 6303. Revolutionary America. 3 Credits.

The political and social conditions of the revolutionary era: the spiral of events that led to the American independence movement, the various meanings of the war to its participants, and the consequences of victory for the nation, its various subgroups, and other peoples of the colonial Atlantic world.

HIST 6304. American Indian History to 1890. 3 Credits.

North American Indian history from indigenous societies on the eve of first contact with Europeans until the conclusion of the Great Plains Wars of the late 19th century.

HIST 6310. Readings in 19th-Century American History. 3 Credits.

Important trends in historical writing about 19th-century America.

HIST 6311. The Era of the Civil War, 1850-1877. 3 Credits.

The sectional crisis that led to the Civil War; the conflict itself in its military, political, and social dimensions; attempts at racial and sectional reconciliation made during Reconstruction.

HIST 6312. The Law of Race and Slavery. 3 Credits.

The role of legal norms and processes in developing patterns of slavery and race relations in the United States and other societies. Admission by permission of instructor. Same as SOC 6286 and LAW 6596.

HIST 6320. Readings/Research Seminar: Recent U.S. History. 3 Credits.

Prerequisite: 6 credit hours of upper-level undergraduate American history courses. Research or readings, depending on students' interests and curricular needs.

HIST 6321. Readings/Research Seminar: Recent U.S. History. 3 Credits.

Continuation of HIST 6320. Prerequisite: 6 credit hours of upper-level undergraduate American history courses. Research or readings, depending on students' interests and curricular needs.

HIST 6322. American Business History. 3 Credits.

The history of American business institutions in manufacturing, distribution, transportation, and finance. Particular attention will be given to the period since industrialization, with consideration of business institutions in their economic, legal, governmental, and social contexts. Same as SMPP 6293.

HIST 6330. Modern U.S. Foreign Policy. 3 Credits.

Readings, lectures, discussion on major developments in the conduct of American diplomacy from 1898 to 9/11. (Fall).

HIST 6350. American Social Thought Since World War II. 3 Credits.

Consideration of C. Wright Mills, Daniel Bell, Abraham Maslow, Christopher Lasch, Paul Goodman, Martin Luther King, Jr., Barbara Ehrenreich, and other major social critics.

HIST 6360. Immigration and Ethnicity in the United States. 3 Credits.

Trends and theoretical issues in the study of American immigration and ethnicity.

HIST 6370. US Legal History. 3 Credits.

The legal history of the United States from the 17th century to the present. The course examines legal change within the broader context of political, social, and economic change. Admission by permission of instructor. Same as LAW 6591.

HIST 6410. Readings in American Cultural History. 3 Credits.

Studies in the cultural history of the United States, focusing on major historiographic debates and interventions. Examples of possible topics include cultural contact, the public sphere, and systems of religious and political belief. Same as AmSt 6410.

HIST 6420. Religion & American Culture. 3 Credits.

Interdisciplinary analysis of religious beliefs, practices, and representations in the United States, as well as intersections of the religious and the secular. Relationships of religion to race, gender, capitalism, science, mass media, and material culture. Same as AMST 6420.

HIST 6430. Gender, Sexuality, and American Culture. 3 Credits.

The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-Columbian settlement to 1876. Same as AMST 6430/ WSTU 6430.

HIST 6431. Gender, Sexuality, and American Culture. 3 Credits.

Continuation of HIST 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as AMST 6431/ WSTU 6431.

HIST 6435. Readings on Women in American History. 3 Credits.

Important works in American women's history; evolution of the field in historiographical context. Same as AMST 6435/ WSTU 6435.

HIST 6450. Race in America. 3 Credits.

Interdisciplinary analysis of the history of race and its changing political, social, and cultural meanings in the United States. Transnational racial formations, struggles for and against civil rights, multiracialism, and interracialism. Same as AMST 6450.

HIST 6455. American Social Movements. 3 Credits.

The history of social movements in the United States, with emphasis on civil rights, feminism, conservatism, and labor in local, national, and transnational contexts; the historical rise and fall of these movements and their larger impact on American life. Same as AMST 6455.

HIST 6470. Cityscapes. 3 Credits.

Interdisciplinary examination of the American city, including urban theory, history, planning, architecture, urban politics, and cultural representations of the city. Same as AMST 6470.

HIST 6475. US Urban History. 3 Credits.

History of American urban life and culture from the Colonial era to the present, focusing on the transitions from pre-industrial to industrial and post-industrial forms, the social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as AMST 6475.

HIST 6480. Theory and Practice of Public History. 3 Credits.

Theoretical and practical dimensions of public history, as illustrated by recent controversies surrounding public exhibitions and debates on revisionist history as well as more traditional means of presenting the past in public forums. Same as AMST 6480.

HIST 6495. Historic Preservation: Principles and Methods. 3 Credits.

The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as AMST 6495.

HIST 6496. Historic Preservation: Principles and Methods. 3 Credits.

Continuation of HIST 6495. The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as AMST 6496.

HIST 6501. Topics: Africa. 3 Credits.**HIST 6502. Western Representations of Africa. 3 Credits.**

Representations of Africa by non-Africans from the earliest contact to more recent encounters.

HIST 6601. Topics: Asian History. 3 Credits.**HIST 6602. Asia: History, Memory, and Violence. 3 Credits.**

Violence has been a defining experience for many of the populations and polities of Asia over the past century and a half. Focusing on the themes of violence and historical memory, the course takes a comparative approach, looking at how these issues have played out in different arenas throughout East, Southeast, and South Asia. (Spring).

HIST 6610. Readings Seminar: Late Imperial China. 3 Credits.

Selected topics in the history of modern China in the late imperial period, with a particular focus on the internal and external challenges to the last Chinese dynasty in the 19th century.

HIST 6611. Readings Seminar: 20th-Century China. 3 Credits.

Selected topics in the history of modern China from the 1911 Revolution to the Cultural Revolution.

HIST 6621. Readings Seminar: Modern Japanese History. 3 Credits.

Selected topics in modern Japanese history from the Meiji Restoration of 1868 to the present. Research or readings depending on students' interests and curricular needs. (Fall).

HIST 6625. Japan's Empire and Its Legacies. 3 Credits.

The history of Japanese imperialism, focusing on colonial modernity, resistance and collaboration, politics of memory, and historical reconciliation.

HIST 6630. Spec Topics in Korean History. 3 Credits.

Intensive exploration of the history of Korea in modern times (1850-present). Korean identity and the challenges of foreign imperialism, industrialization, modernization, and globalization.

HIST 6641. Modern Southeast Asia. 3 Credits.

The modern history of Southeast Asia from the 1800s to 1975. Colonialism, rise of postcolonial states, revolutions and persistence of the past.

HIST 6701. Topics in Latin American History. 3 Credits.**HIST 6801. Topics in Middle Eastern History. 3 Credits.****HIST 6811. Rsearch Sem:Modern Middle East. 3 Credits.**

Readings, discussion, and research in selected political, economic, social, cultural, and intellectual trends.

HIST 6821. Islam and Social Movements. 3 Credits.

An examination of the relationship of religion and religious symbols to social and political movements in the Islamic world.

HIST 6822. Nationalism in the Middle East. 3 Credits.

Different interpretations of nationalism and their applicability to nationalism in the Middle East.

HIST 6823. Imperialism in the Middle East. 3 Credits.

An exploration of the process of European and American expansion in the Middle East.

HIST 6824. Rdg/RsrchSem: Modern Iran. 3 Credits.**HIST 6998. Thesis Research. 3 Credits.****HIST 6999. Thesis Research. 3 Credits.****HIST 8998. Advanced Reading & Research. 1-12 Credits.**

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

HIST 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

HOMINID PALEOBIOLOGY (HOMP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HOMP 6201. Hominid Paleobiology. 3 Credits.

Study of human evolution through investigation of the fossil record; current research in reconstructing paleobiology. Adaptation, phylogeny and behavior reconstruction, site formation, and the taxonomy, site context, anatomy, behavior, and major issues surrounding each hominin taxon.

HOMP 6202. Lab Techniques: Paleoanthro. 1-3 Credits.

HOMP 6203. Ethics & Professional Practice I. 1 Credit.

HOMP 6204. Ethics & Professional Practice II. 1 Credit.

HOMP 6995. Research. 0-12 Credits.

Research on problems approved by the director of the program. Open to qualified students with advanced training. May be repeated for credit.

HOMP 6998. Thesis Research. 3 Credits.

HOMP 6999. Thesis Research. 3 Credits.

HOMP 8301. Problem-Based Learning Seminar. 1-3 Credits.

Problem-based tutorial in hominid paleobiology. Development of research skills through problem-solving tasks in a small group. May be repeated for credit.

HOMP 8302. Public Understand Of Science Intern. 3 Credits.

Supervised participation in an institution that presents science to the public. Opportunity to participate in procedures and gain practical experience in disseminating scientific information to non-scientists.

HOMP 8303. Paleobiology Lab Rotation. 2-3 Credits.

Supervised participation in a relevant laboratory. Students learn analytical techniques, handle diverse types of data, and encounter a range of disciplines as preparation for later participation in interdisciplinary research projects. Admission by permission of the program chair. May be repeated for credit.

HOMP 8998. Advanced Reading and Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

HOMP 8999. Dissertation Research. 3-24 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

HONORS (HONR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HONR 1015. Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought. 4 Credits.

Exploration of significant exemplars, milestones, and developments of human thought; foundational and representative thinkers and texts from Western and Eastern traditions provide an indication of the diversity and complexity of attempts to articulate responses to universal questions, problems, and aspirations.

HONR 1016. Honors Proseminar: Origins and Evolution of Modern Thought. 3 Credits.

Continuation of HONR 1015. Key developments and trajectories in human thought and inquiry into modern times.

HONR 1033. Honors Proseminar: Scientific Reasoning and Discovery. 4 Credits.

Using an inquiry-based approach, students learn to identify hidden regularities and patterns in nature that may indicate fundamental unifying principles and laws. The scientific method; evaluation of scientific information; limitations of the scientific process; development of a scientific hypothesis. Tools and methodologies of geology, chemistry, physics, biology, anthropology, and other disciplines.

HONR 1034. Honors Proseminar: Scientific Reasoning and Discovery. 4 Credits.

Continuation of HONR 1033. Using an inquiry-based approach, students learn to identify hidden regularities and patterns in nature that may indicate fundamental unifying principles and laws. The scientific method; evaluation of scientific information; limitations of the scientific process; development of a scientific hypothesis. Tools and methodologies of geology, chemistry, physics, biology, anthropology, and other disciplines.

HONR 2016. Enlightenment East & West. 4 Credits.

This course replaces HONR 1016 for students who enter the Honors Program as sophomores.

HONR 2043. Honors Introductory Economics. 3 Credits.

An introductory microeconomics course that considers both the philosophical basis of economics as well as its methods and applications.

HONR 2044. Honors Introductory Economics. 3 Credits.

An accelerated introductory macroeconomics course that includes the study of special topics.

HONR 2047. Honors Proseminar: Social and Behavioral Sciences. 3 Credits.

Using the tools and modes of inquiry of the social and behavioral sciences, students find ways to understand significant social and political phenomena. Relationships among individuals, collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture.

HONR 2047W. Prosem:Soc & Behav Sci. 3 Credits.**HONR 2048. Honors Proseminar: Social and Behavioral Sciences. 3 Credits.**

Continuation of HONR 2047. Using the tools and modes of inquiry of the social and behavioral sciences, students find ways to understand significant social and political phenomena. Relationships among individuals, collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture.

HONR 2053. Honors Proseminar: Arts and Humanities. 3 Credits.

Using an array of artistic forms (poetry, prose literature, drama, film, painting, sculpture, architecture, dance, and music), students explore the ways cultures are defined and understood through artistic expression, and the ways in which particular cultures value and critique these forms of personal and social expression.

HONR 2053W. Arts & World Cultures Prosem. 3 Credits.**HONR 2054. Honors Proseminar: Arts and Humanities. 3 Credits.**

Continuation of HONR 2053. Using an array of artistic forms (poetry, prose literature, drama, film, painting, sculpture, architecture, dance, and music), students explore the ways cultures are defined and understood through artistic expression, and the ways in which particular cultures value and critique these forms of personal and social expression.

HONR 2054W. Arts & World Cultures Prosem. 3 Credits.**HONR 2110. University Symposium. 1 Credit.****HONR 2125. Justice and the Legal System. 3 Credits.****HONR 2175. Honors Special Topics. 0-6 Credits.****HONR 2175W. Honors Special Topics. 0-6 Credits.****HONR 2182. Honors Internship. 1-3 Credits.****HONR 2184. Honors Undergraduate Research. 1-4 Credits.**

Independent or faculty-mentored research resulting in a significant written or other product.

HONR 2185. Honors Research Assistantship. 0-4 Credits.

Students provide substantive assistance to a faculty member engaged in scholarly or scientific research.

HONR 4198. Honors Senior Thesis. 3-4 Credits.

One- or two-semester thesis under faculty guidance. May be repeated for credit. (Fall and spring).

HONR 4199. Honors Capstone Experience. 1 Credit.

Students re-engage with core questions and issues related to the Honors Program curriculum, reflecting on their learning in relation to enduring questions and challenges of our world. (Fall and spring).

HUMAN DEVELOPMENT (HDEV)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HDEV 6108. Life Span Human Development. 3 Credits.

Continuity and change in developmental attributes. The developing person in relation to social norms, roles, and stage-graded expectations from birth to death. Interaction between biogenetics and environment.

HDEV 6109. Child Development. 3 Credits.

Typical development and the familial and social antecedents of developmental risk. Environments that foster competent children and developmental sequelae of childhood vulnerability and trauma. For graduate students in counseling, psychology, and related disciplines.

HDEV 6110. Adolescent Development. 3 Credits.

Key attributes and problems in adolescent development. Typical adolescent development and contemporary social problems in relation to stress, risk, and resilience. For graduate students in counseling, psychology, and related areas.

HDEV 6129. Cultural Effects on Human Development. 3 Credits.

Effects of culture on the experience and expression of self, others, space, time, faith systems, norms, and other attributes. Egocentric and sociocentric effects, primitive and technological effects. Group immersion as the basis for prejudice. Developmental consequences as a consequence of cultural context.

HDEV 6161. Practicum in Human Development. 3 Credits.

Admission by permission of instructor.

HDEV 6162. Internship in Human Development. 3 Credits.

Admission by permission of instructor.

HDEV 6701. Adult Learning. 3 Credits.

Same as HOL 6701.

HDEV 8100. Issues and Special Topics in Human Development. 3-6 Credits.

Issues and special contemporary topics related to child, adolescent, and adult development. Applications for professional roles.

HDEV 8241. Emotional and Cognitive Dev. 3 Credits.

Emotional and cognitive development as related to self-esteem, social cognition, and interpersonal skills. Relationships among cognitive development, intellectual reasoning, insight, and social development.

HDEV 8244. Adult and Aging Development. 3 Credits.

Theories and research on personality and intelligence in adulthood. Research designs and methods. Implications of developmental data for counseling and selected professional roles.

HDEV 8253. Work, Identity, and Adult Development. 3 Credits.

The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as CNSL 8253/ HOL 8742.

HUMAN ORGANIZATIONAL LEARNING (HOL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HOL 0920. Continuing Research - Master's. 1 Credit.**HOL 0940. Cont. Res. - Doctoral. 1 Credit.****HOL 6100. Special Workshop. 1-12 Credits.**

Topics to be announced in the Schedule of Classes. May be repeated for credit.

HOL 6101. Research and Independent Study. 1-3 Credits.

Preparation of an in-depth project under the guidance of a faculty member. The course is arranged individually with an instructor.

HOL 6700. Foundations of Human Resource Development. 3 Credits.

How individuals and groups learn and interact within organizations and how organizations function and learn. Motivation, group dynamics, systems theory, organizational culture, and change.

HOL 6701. Adult Learning. 3 Credits.

Premises and theories used to meet learning needs of adults. Overview of various learning theories and the impact of various stages of adult development on learners. Topics including self-directed learning, accommodating individual learning needs, and creation of effective learning techniques. Same as HDEV 6701.

HOL 6702. Organizational Change I. 3 Credits.

The assessment of organizational conditions, including collection and interpretation of information, operations, and problems (human, structural, and systemic). Course participants collect and analyze data to provide solutions to enhance organizational effectiveness.

HOL 6703. Organizational Change II. 3 Credits.

Introduction to the concepts, methods, and skills required for effective consultation in organizations, as either an internal or an external consultant. Meeting the human needs in organizations, while improving performance and productivity. Students undertake a consulting project in an organization.

HOL 6704. Leadership in Organizations. 3 Credits.

Developments in theory and research centered on organizational leadership. Emphasis on transformational leadership.

HOL 6705. Strategic Human Resource Development. 3 Credits.

Overview of systematic development of an organization's capability to implement its strategy. Leading an organization through change, with an emphasis on HRD systems.

HOL 6706. Issues in Human Resource Development. 3 Credits.

Current issues and topics of importance in the field. Students gather data and analyze key topics associated with areas such as globalization, diversity in the workplace, organizational development, and ethics.

HOL 6707. Organizational Learning. 3 Credits.

Learning in an organizational context. Processes through which the organization as a system learns, unlearns, changes, and disseminates information. Organizational learning theories address the processes and barriers of gathering, using, developing, and retaining knowledge in organizations.

HOL 6720. Advanced Strategies for Adult Learning. 3 Credits.

Theoretical and practical strategies of adult learning in various settings, including corporate environments. Learning strategies, such as creative thinking and self-directed learning. Critical adult learning issues.

HOL 6721. Assessing the Impact of HRD Efforts. 3 Credits.

Knowledge and skills needed to evaluate the impact and return on investment of HRD efforts. Focus on how to plan and conduct systematic evaluations of HRD efforts, including the choice, development, and use of various tools for measuring individual, group, and organizational change.

HOL 6724. Increasing the Capacity to Learn. 3 Credits.

Identification of actions that can help increase the capacity to learn. Emphasis on experimental learning and critical reflection.

HOL 6725. Internship in Human Resource Development. 3-6 Credits.

Supervised experience in selected areas of human resource development and adult education. Admission by permission of instructor.

HOL 6742. Design of Adult Learning Interventions. 3 Credits.

Designing and implementing adult learning programs. Topics include instructional design techniques, designing effective programs, program planning and marketing techniques, and conducting needs assessments and evaluations of adult learning programs.

HOL 6743. Action Learning. 3 Credits.

Processes, principles, and skills necessary to participate in and lead both single- and multiple-problem action learning sets. The six dimensions of action learning; educational psychological, political, sociological, and management theories underlying action learning.

HOL 6744. Meaningful Workplaces. 3 Credits.

Characteristics of the humane organization and of meaningful work. Intrinsic motivation, work-life balance, and the workplace community.

HOL 6745. Technology and Human Resource Development. 3 Credits.

How technology can best be utilized in the HRD environment. Discussion of CBT, use of the Internet for instruction, and distance learning techniques.

HOL 6746. Work Groups and Teams in Organizations. 3 Credits.

Exploration of the nature of work groups and teams as they are utilized in organizational settings. Group and team dynamics, facilitating and leading skills, and group roles and culture.

HOL 6747. International and Multicultural Issues in Organizations. 3 Credits.

The impact of culture and globalization on U.S. and international human and organizational learning programs and practices. Adult learning and organizational change approaches that develop and utilize the synergy of a global workforce.

HOL 6998. Thesis Research. 3 Credits.

HOL 6999. Thesis Research. 3 Credits.

HOL 8100. Special Topics in Human and Organizational Learning - Doctoral Studies. 3 Credits.

Topics to be announced in the Schedule of Classes. May be repeated for credit. (Fall, spring, and summer).

HOL 8101. Research and Independent Study. 1-3 Credits.

HOL 8700. Foundations of Human and Organizational Learning. 3 Credits.

The study of individuals and their interactions within an organizational context. Overview of key theories in leadership, systems theory, group dynamics, learning, organizational culture, and motivational theory. The use of research in human and organizational learning.

HOL 8701. Theory, Research, and Practice in Adult Learning and Development. 3 Credits.

Learning theories as applied to adults in individual and group learning transactions; effect of age on learning; psychological, physical, and social environments in adult education situations.

HOL 8702. Theory and Design of Organizational Diagnosis and Development. 3 Credits.

Focus on various paradigms through which organizations and their functions may be viewed; a variety of analytical models of organizations; techniques for assessing systems; application of analysis techniques.

HOL 8703. Human Systems Change. 3 Credits.

The classical and contemporary ideas related to social systems change; the relation of these ideas to current issues in organizations.

HOL 8704. Leadership Theory, Research, and Practice. 3 Credits.

HOL 8706. Interdisciplinary Readings in Human and Organizational Learning. 3 Credits.

Seminal works from various disciplines related to current research and practice.

HOL 8707. Advanced Organizational Learning. 3 Credits.

The psychological and sociological paradigms associated with the learning of a collective whole.

HOL 8720. Seminar: Applied Research in Human and Organizational Learning. 3 Credits.

Identification of initial constructs and theories that support the identified research interest, with a problem statement and critical analysis of research reports and review of research literature.

HOL 8721. Practicum in Human and Organizational Learning. 3-6 Credits.

HOL 8722. Seminar: Advanced Issues in Human and Organizational Learning. 1-12 Credits.

Forum in which candidates critically examine relevant classic and contemporary literature, with analysis and synthesis to defend their research questions and conceptual frameworks.

HOL 8723. Organizations and Strategy in Human Resource Systems. 3 Credits.

Overview of paradigms, theories, models, and constructs of organizations and strategy to understand organizations and their environments.

HOL 8741. Managerial and Organizational Cognition. 3 Credits.

The emerging field of collective cognition in organizations, including theoretical foundations and seminal and current literature on knowledge structures and their role in strategy formation, organizational change, and sensemaking.

HOL 8742. Work, Identity, and Adult Development. 3 Credits.

The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as CNSL 8253/HDEV 8253.

HOL 8746. Work Groups and Teams in Organizations. 3 Credits.

Theoretical understanding and practical considerations of working with groups and teams. Group dynamics, facilitating and leading groups, and member roles. Group facilitation techniques across different group settings and environments.

HOL 8998. Predissertation Seminar. 3-6 Credits.

Platform for further development of the dissertation proposal.

HOL 8999. Dissertation Research. 3,6 Credits.

Prerequisite: HOL 8998.

HUMAN SERVICES&SOCIAL JUSTICE (HSSJ)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HSSJ 1100. Introduction to Human Services and Social Justice. 3 Credits.

This course will serve as an introduction to the field of human services. Students will gain knowledge of the history of the social welfare system in the United States and around the world, and be able to apply this knowledge to current day events. This course will introduce students to the different areas covered in human services, and teach students the skills required of workers in this field. The course will also introduce students to the issues related to working within human services systems, and give students the opportunity to examine their own beliefs and values related to human service work.

HSSJ 1150. NonProfit Management. 3 Credits.

Since the 1950s, there has been enormous expansion of non-profit organizations around the world that shows no signs of slowing down any time soon. Currently, around 12 billion USD are given globally to non-profits from international entities (such as the United Nations and the European Union), national and local governments, foundations, and private donors. NGOs, large and small, are becoming premiere providers for the delivery of social services, health care, education, and other service-oriented endeavors, especially in hard to reach communities. Thus understanding how NGOs are formed and managed is crucial for anyone planning on working in the field, or even in government where services are contracted out to NGOs. We will begin the class by reviewing the structure of NGOs and their organizational culture before delving into how NGOs are managed by focusing on case studies and on-site field experiences with NGOs.

HSSJ 1177. Organizing for Social Justice in Human Services. 3 Credits.

Theory in community organizing and social justice is connected with an opportunity to explore how it is applied directly in the field. Methods used by non-profit organizations and campaigns to address issues in human services.

HSSJ 2160. Role of NGOs in International Humanitarian Assistance. 3 Credits.

The role of non-governmental organizations in providing service and care for vulnerable individuals and communities. NGOs as actors in the international humanitarian community, with focus on their development, the place they hold in international interventions, and the types of services they provide. (Fall and spring).

HSSJ 2170. Interpersonal Relationships in Human Services. 3 Credits.

The purpose of this course is to provide students with the theoretical knowledge, research, skills, and ethics of cultivating and managing professional interpersonal relationships in the field of human services. The course will include lecture, assigned readings, demonstration, role-play, recording, and service-learning. Topics covered include: starting and ending professional relationships; basic helping skills; case management; working in, through, and with difference; strengths-based models of individual change; cultural competence; and, working in teams. These interpersonal skills are vital to the success of the Human Services scholar-practitioner.

HSSJ 2171. Human Interactions: Child and Adolescent Development. 3 Credits.

Human development from infancy to young adulthood. Psychosocial, cognitive, and physical competencies; motivational changes; coping styles; normative and non-normative behaviors. Three hours of weekly service-learning in an agency setting.

HSSJ 2172. Human Interactions: Adult Development. 3 Credits.

Human development from young adulthood to old age. Explore dominant psychosocial, cognitive, and physical competencies; motivational changes; coping styles; normative and non-normative behaviors. Three hours of weekly service-learning in an appropriate agency setting. May be taken before HSSJ 2171.

HSSJ 2200. Principles of Ethical Leadership. 3 Credits.

The practices and commitments of ethical leaders to enhance organizational effectiveness, engage diverse perspectives, clarify values and mission, and promote commitment to shared purposes. (Spring).

HSSJ 3100. Program Planning & Evaluation. 3 Credits.

Through case studies and on-site field experiences, students analyze processes by which agency needs are assessed and programs planned. Community-based research. Prerequisite: SOC 2101 OR PSYC 2101 OR PSC 2101, and status as a human services major or minor or permission of the instructor. (Fall).

HSSJ 3100W. Program Planning & Evaluation. 3 Credits.

Through case studies and on-site field experiences, students analyze processes by which agency needs are assessed and programs planned. Community-based research. Prerequisite: SOC 2101 OR PSYC 2101 OR PSC 2101 and status as a human services major or minor or permission of the instructor. (Fall).

HSSJ 3110. Nonprofit and Organizational Management. 3 Credits.

Organizational theory and program administration in community agencies; staff recruitment and development; fiscal operations including funding; facilities; and effective community relations. Community-based research. Prerequisite: SOC 2101 and status as a human services major or minor or permission of the instructor. (Spring).

HSSJ 3110W. Nonprofit and Organizational Management. 3 Credits.

Organizational theory and program administration in community agencies; staff recruitment and development; fiscal operations including funding; facilities; and effective community relations. Community-based research. Prerequisites: SOC 2101 and status as a human services major or minor or permission of the instructor. (Spring).

HSSJ 3152. Fact/Field/Fiction: Intersections in HSSJ. 1-6 Credits.

Integration of theoretical, empirical, and practical knowledge with real-world issues in human services through socially just practices. Students conduct community-based research and complete a significant service-learning experience at an approved not-for-profit organization (approximately 16 hours per week).

HSSJ 4133. Supervised Experience in HSSJ. 3-6 Credits.

Supervised independent work on an issue within the field of human services for approximately 100 hours. Research paper. Limited to majors and minors who have taken at least one HSSJ course beyond HSSJ 1100. Admission by permission of program director and supervising instructor.

HSSJ 4193. Research and Independent Study. 1-6 Credits.

This course enables students with a 3.3 GPA to explore in depth a topic relevant to human services by designing, conducting, evaluating, and presenting original research. Recommended for rising seniors who are considering graduate study and/or want to graduate with Special Honors. May be repeated for credit to a maximum of 12 credits.

HSSJ 4195. Capstone Seminar in HSSJ. 1-3 Credits.

A culminating experience involving synthesizing the knowledge, skills, abilities, and attitudes needed to address complex real-world issues in socially just ways. Students are required to integrate and reflect on the key theories, research, practices, issues, and policies addressed throughout the program. For students completing their final spring semester in the program.

HSSJ 4198. Topics in HSSJ. 1-3 Credits.

Topics to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

HUMANITIES (HMN)

Explanation of Course Numbers

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HMN 1001W. Roots of the Western Tradition. 3 Credits.

INFORMATION SYSTEMS TECHNOLOGY MANAGEMENT (ISTM)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ISTM 3119. Introduction to Programming. 3 Credits.

For students already familiar with basic computer concepts, who will learn a programming language, such as Visual Basic, useful for business applications. Emphasis on computer applications in accounting and management information systems through hands-on programming. Prerequisite: BADM 2301.

ISTM 4120. Structured Development with CASE. 3 Credits.

Analysis, design, and implementation of management information systems (MIS). Structured methodologies and techniques for various stages of the MIS development process. Computer-aided software engineering tools. May be taken for graduate credit with permission of program director and instructor. Prerequisite: ISTM 3119 or permission of instructor.

ISTM 4121. Database Design and Applications. 3 Credits.

Theory, architecture, and implementation of database management systems in corporate and organization information systems. Fundamental concepts of database management and processing. Hands-on experience with database management packages. Prerequisite: ISTM 3119 or permission of instructor.

ISTM 4123. Business Data Communications. 3 Credits.

A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Prerequisite: BADM 2301.

ISTM 4123W. Business Data Communications. 3 Credits.

A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Prerequisite: BADM 2301.

ISTM 4130. Writing on the Ethics of Technology. 3 Credits.

Complex ethical dilemmas inherent in the introduction of new technologies and the influence human behavior asserts on these problems. Students write stories to explore and evaluate specific ethical problems relative to technology from various perspectives.

ISTM 4130W. WritingOnTheEthicsofTechnology. 3 Credits.

Complex ethical dilemmas inherent in the introduction of new technologies and the influence human behavior asserts on these problems. Students write stories to explore and evaluate specific ethical problems relative to technology from various perspectives.

ISTM 4900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

ISTM 4900W. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

ISTM 4995. Independent Study. 3 Credits.

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

ISTM 6201. Information Systems Development and Applications. 3 Credits.

The information systems life cycle evaluated in terms of technologies, impact, and management. Structured and object-oriented analysis, prototyping, software reuse, testing, life-cycle costs, software development environments, and organizational and behavioral aspects of development projects. Prerequisite: ISTM 4120 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6202. Relational Databases. 3 Credits.

Introduces the theory of relational databases and commences an in-depth discussion of Relational database theory and design at the conceptual, logical, and physical levels. Structured query language (SQL) is covered in depth. Prerequisite: ISTM 4121 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6203. Telecommunications and Enterprise Networks. 3 Credits.

The technologies and applications of telecommunication systems in the commercial and public sectors with emphasis on wireless, mobile, and Internet communication protocols. Systems technology and configurations to support business application requirements are evaluated. Functional characteristics of network technologies. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6204. Information Technology Project Management. 3 Credits.

Project and program management practices with an emphasis on information technology projects. The basic tools of project management: work breakdown structure, cost, schedule and performance goal setting, and risk analysis. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6205. Internet Computing. 3 Credits.

Concepts, architectures, frameworks, and technology of web application development. The Internet as hardware and software architecture for creating business applications. Web and web application servers, system development methods and techniques, client-side and server-side scripting. Prerequisite: ISTM 3119 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6206. Information Systems Security. 3 Credits.

Comprehensive examination of computer security issues from the design, management, and business information system ownership perspectives. System security concepts, methods, and policies from the design and planning stages to multi-level system implementation. Design of risk assessment strategies to achieve security goals. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6207. Information Resources Management. 3 Credits.

Information resources management strategically assesses and exploits information technology assets for competitive advantage. The CIO role in information resources management, planning, security, information integration, enterprise model development, and data administration. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6210. Integrated Information Systems Capstone. 3 Credits.

Capstone project course in which students apply conceptual and technical knowledge in analyzing, planning, and designing an on-line information system. Culminates with system proposal/design presentations. Restricted to eligible students in their final semester. Prerequisite: ISTM 6201–ISTM 6207 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6211. Data Warehousing and Online Analytical Processing. 3 Credits.

Introduction to the theory of data warehousing, dimensional data modeling, and online analytical processing (OLAP) through case studies, technology, and a design project. Prerequisite: ISTM 6202 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6213. Enterprise Web and Database Applications. 3 Credits.

Enterprise applications concepts, architecture, and technologies for emerging technologies and IT frameworks. The Internet as a major resource for globally distributed applications using grid and utility computing. Web servers, development methods and techniques, data stores for massively distributed applications, and client/server side scripting. Prerequisite: ISTM 6202, ISTM 6205 and M.S.I.S.T. candidacy or departmental approval.

ISTM 6214. Advanced Programming and Business Applications. 3 Credits.

Advanced programming design, development, and analysis topics with an emphasis on business applications. Problem modeling and development of algorithm solutions. Basic data structures and algorithms, such as linked list, stack and tree, graph theory, sorting and searching. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6215. Human-Computer Interaction. 3 Credits.

Human-computer interaction as an interdisciplinary endeavor integrating theories and methodologies from computer science, cognitive psychology, design, and many other areas. Theory and practice in interface specification design and evaluation, and research. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6221. Management Perspectives in Electronic Commerce. 3 Credits.

The tools, skills, and business concepts surrounding the emergence of E-commerce and its information technologies from operational and strategic perspectives. E-commerce security, privacy, content selection and rating, authentication, encryption, acceptable use policies, intellectual property rights, and legal liabilities. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6222. IS/IT Strategy and Implementation. 3 Credits.

The development and implementation of information systems and technology strategies designed to align with and maximize business strategy applications and approaches in a challenging and increasingly global business environment. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6223. Technology Entrepreneurship. 3 Credits.

Case studies on the innovation-entrepreneurship processes used to launch and build new ventures based on information technology and on technology more broadly. Organizing for innovation, raising venture capital, managing the small technology-based venture, marketing technology products and services, intellectual property considerations, and new venture proposal development. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6224. Management of Technology and Innovation. 3 Credits.

Business, technological, economic, and political factors that influence the development and deployment of new technology products, processes, and services. Concepts and practices useful in managing technology and enhancing corporate innovation, corporate organizational alternatives, new approaches, and sources of competitive advantages. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6225. Enterprise Architecture. 3 Credits.

Concepts of enterprise architecture as a management tool for organizations to align their information technology assets, people, operations, and projects with operational characteristics. Service-oriented architectures, performance reference models, configuration management, system development life cycles, and tiered application architectures. Prerequisite: M.S.I.S.T. candidacy or departmental approval.

ISTM 6226. Principles of Information Systems. 3 Credits.

Overview of all information systems, including integration of management, information, and systems concepts into a unified framework. Management information systems development, design, implementation, evaluation strategies. (Fall, spring, and summer).

ISTM 6232. ISTM6242201303. 3 Credits.

Technology transfer among advanced countries and LDCs. Comparative science and technology policies and capabilities of countries. Technology basis for international trade, licensing, patenting, and joint ventures. Global transfer of military technologies and export controls. Technology in economic development. (Spring).

ISTM 6233. Emerging Technologies. 3 Credits.

Exploration of new developments in scientific and technological innovation, including automation, energy, medicine, bioengineering, social science, information technology, and space. Emphasis on forecasting these technological advances and assessing their economic and social effects. The role of advancing technology in driving social change. (Spring).

ISTM 6234. New Venture Financing. 3 Credits.

Fundamentals and practice of due diligence and screening of early-stage investment opportunities. Same as FINA 6234.

ISTM 6239. Sem:Competitiveness/Technology. 3 Credits.

Capstone course integrating the field of management of science, technology, and innovation. Commercialization of technology in the private sector and the impact on competitiveness. Implementation of technology in the public sector. Technology development, from new product concept to utilization. Prerequisite: ISTM 6224 or MBAD 6253; ISTM 6232 or ISTM 6233 or permission of instructor.

ISTM 6242. Systems Analysis-Info Systems. 3 Credits.

Development of a specification for an information system. Topics include CASE tools, data gathering, information flow modeling, object-oriented analysis, data file organization, input/output and other nonfunctional requirements. Prerequisite: MBAD 6252.

ISTM 6243. Human Factors in Information Systems. 3 Credits.

The user-computer interaction, human factors of on-line dialogues, interfacing, and various approaches to user-system interaction. Emphasis on the development and evaluation of user-computer interfaces using software such as Visual BASIC and Windows. (Fall and spring).

ISTM 6244. Telecommunications: Technology, Applications, and Operations. 3 Credits.

Basic technical concepts, applications, and trends of telecommunications; operations; cost considerations of implementing telecommunications systems. Prerequisite: MBAD 6252.

ISTM 6245. Database Management for Information Systems. 3 Credits.

An introduction to the conceptual and logical design of relational databases and techniques for population and exploitation of relational databases. Topics include information modeling, normalized table design, and Structured Query Language. Prerequisite: MBAD 6252.

ISTM 6251. Info Systems Applications. 1.5 Credit.**ISTM 6290. Special Topics. 1-3 Credits.**

Experimental offering; new course topics and teaching methods. May be repeated once for credit. (Fall, spring, and summer).

ISTM 6298. Directed Readings and Research. 1-3 Credits.**ISTM 6401. Individual and Group Decision Processes. 3 Credits.**

Study of the individual and group processes in decision making in organizations. Topics include decision effectiveness, decision analysis techniques, group dynamics, and managerial style as related to decision making. Available only to students enrolled in the Executive Master of Science in Information Systems Technology.

ISTM 6402. Quantitative Methods for Information Systems. 3 Credits.

Introductory study of quantitative techniques for problem solving. Statistical concepts, including confidence intervals, hypothesis testing, correlation, and regression. Linear programming. Applications and case studies involving management information systems. Available only to students enrolled in the Executive Master of Science in Information Systems Technology.

ISTM 6404. Enterprise Networks in Organizations. 3 Credits.

The role of data communications and networking within organizations. LANs and interconnecting LANs to create enterprise networks. Emerging technologies such as videoconferencing, multimedia, and ATM. The interaction between networks and MIS as typified by client-server architectures is emphasized. Available only to students enrolled in the Executive Master of Science in Information Systems Technology.

ISTM 6405. Database Systems. 3 Credits.

Application and implementation of database management systems in the public and private sectors. Database organization, creation, maintenance, and management. Client-server technology. Review of commercial database management systems. Available only to students enrolled in the Executive Master of Science in Information Systems Technology.

ISTM 6406. Decision Support Systems and Methods. 3 Credits.

Computer-based decision-making aids and simulations. Issues in effective implementation of decision support systems. Review and analysis of various expert systems, including tools and generators, classification vs. diagnostic type systems, and building modules. Design of decision support and expert systems. Available only to students enrolled in the Executive Master of Science in Information Systems Technology.

ISTM 6407. Introduction to MIS Business Relationships. 3 Credits.

Introduction to MIS business solutions. Integration of MIS into the business and organizational environment. Case studies of various organizational structures and MIS needs and solutions. Economic analysis of MIS applications.

ISTM 6408. Strategic Planning and Business Process Engineering. 2 Credits.

Development and implementation of a long-range organizational strategy. Business process engineering and re-engineering. Technology assessment and technical management, use of critical success factors. Innovative uses of MIS in organizations. Available only to students enrolled in the Executive Master of Science in Information Systems Technology.

ISTM 6410. Information Systems Security. 2 Credits.

Network and MIS security issues. Risk assessment, technological and procedural security measures. Computer fraud and privacy issues. Hacker attacks, phone fraud, denial of service, and virus and work attacks. Available only to students enrolled in the Executive Master of Science in Information Systems Technology.

ISTM 6411. Information Systems Design. 4 Credits.

Introduction to the design and analysis of information systems. The systems development life cycle, analysis of requirements, design of logical systems, analysis and design of user interfaces, system documentation and specifications. Planning for system implementation, evaluation, and maintenance. Available only to students enrolled in the Executive Master of Science in Information Systems Technology.

ISTM 6412. The Information System Development Process. 2 Credits.

Management decisions and activities during the life cycle of an information system. Project estimation and planning for information systems. Contractual issues in system development and acquisition. Requirements analysis, systems analysis, development, testing, and maintenance. Rapid prototyping, spiral model development, and alternative development strategies. Available only to students enrolled in the Executive Master of Science in Information Systems Technology.

ISTM 6490. Special Topics. 1-3 Credits.

Available only to students enrolled in the Executive Master of Science in Information Systems Technology.

ISTM 8300. Thesis Seminar. 3 Credits.

ISTM 8333. Seminar: Management of Science, Technology, and Innovation. 3 Credits.

ISTM 8340. Philosophical Issues in Information Systems. 3 Credits.

Seminar for doctoral students interested in information systems. Various philosophical traditions and insights from those traditions applied to problems in information systems. (Fall, alternate years).

ISTM 8341. Advanced Topics in MIS Rsrch. 3 Credits.

For information systems doctoral students. Seminal papers and leading methods and instruments as applied to MIS research. (Spring, alternate years).

ISTM 8385. Special Topics in Research Methods. 3 Credits.

Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers. (Fall and spring).

ISTM 8390. Philosophical Foundations of Administrative Research. 3 Credits.

Philosophy of science as applied to research in administration. Topics include the nature and current problems of epistemology, the development and role of theories, and the relationship between theory, methodology, and empirical data. (Fall and spring).

ISTM 8391. Advanced Problems in Research Methodology. 3 Credits.

Use of models and theoretical frameworks in research; formulation of research questions, hypotheses, operational definitions, research designs, sampling and data analysis approaches. For doctoral candidates who have completed the general examination and all courses and are preparing for their dissertation. (Fall and spring).

ISTM 8397. Doctoral Seminar. 1-3 Credits.

Current research and scholarly issues in management science.

ISTM 8398. Advanced Rdgs and Research. 1-12 Credits.

Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

ISTM 8399. Dissertation Research. 1-12 Credits.

Limited to doctoral candidates. May be repeated for credit.

INTEGRATED INF, SCI, AND TECH (PSIS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSIS 2101. Writing & Comm & Med Rel - I. 4 Credits.

PSIS 2102. Writing & Comm & Med Rel - II. 4 Credits.

PSIS 2103. Found Math & Stat Sci - I. 4 Credits.

PSIS 2104. Found Math & Stat Sci - II. 4 Credits.

PSIS 2105. Found Info Tech & Comp - I. 4 Credits.

PSIS 2106. Found Info Tech & Comp - II. 4 Credits.

PSIS 3122. Ethics in Sci & Tech Policy. 4 Credits.

PSIS 3123. Legislative Aff & Gov Proc. 4 Credits.

PSIS 4131. Molecular Bio for Biotech. 4 Credits.

PSIS 4132. Phys Principles of Biotech. 4 Credits.

PSIS 4133. Bioinformatics. 4 Credits.

PSIS 4134. Biophysics in Life Sciences. 4 Credits.

PSIS 4135. Computational Modeling. 4 Credits.

PSIS 4136. Intro Biomed Instrumentation. 4 Credits.

PSIS 4137. Alternative Energy Sources. 4 Credits.

PSIS 4138. Introduction to Health IT. 4 Credits.

Current and emerging healthcare information technologies, the policies involved in the delivery of healthcare and health IT, and the people and the processes that support the delivery of healthcare. Restricted to Majors only. (Fall, spring, and summer).

PSIS 4141. Comp & Telecom Networks. 4 Credits.

PSIS 4142. Rel Databases & Design. 4 Credits.

PSIS 4143. Systems Integration. 4 Credits.

PSIS 4144. Info & Network Security. 4 Credits.

PSIS 4145. Software Sys Dev Processes. 4 Credits.

PSIS 4151. Entrepreneurship & Comm Tech. 4 Credits.

PSIS 4152. Entrprnrshp/Tech Venture Cr. 4 Credits.

PSIS 4190. Capstone Proj & Senior Thesis. 4 Credits.

PSIS 4191. Capstone Project and Senior Thesis I. 2 Credits.

The capstone project allows either the conduct of significant independent research or the design and implementation of a real-world project. Either choice is a means for students to use the knowledge and skills they have acquired throughout the program. For most students, the capstone project can showcase their skills via a comprehensive written report or a portfolio that can be presented to future employers. (Fall, spring, and summer).

PSIS 4192. Caps Proj & Senior Thesis- II. 2 Credits.

PSIS 4195. Undergraduate Research. 1-4 Credits.

PSIS 4199. Special Topics. 2-4 Credits.

INTERIOR ARCHITECTURE AND DESIGN (IAD)

INTERIOR DESIGN (INTD)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

INTD 3141. Color Theory. 3 Credits.

Intensive exploration of the objective rationale and subjective experience of color in interiors through execution of problems in color contrast and color scales. (Spring).

INTD 3150. Special Topics. 3 Credits.

A theoretical and practical in-depth exploration of a specific area of interior design. Topic to be announced in the Schedule of Classes.

INTD 3160. Individual Problems & Research. 1-6 Credits.

Independent research on selected topic. Research proposal must be approved by program advisor prior to registration. May be repeated for credit with permission.

INTD 3160W. Individual Problems & Research. 1-6 Credits.

INTD 4104. Studio III: Institutional. 3 Credits.

Application of theories of human behavior and design in large-scale institutional settings, including public and private facilities serving medical, educational, and extended-care needs. Prerequisite: IntD 4103, 4113, and 2121. (Spring).

INTD 4123. Methods&Materials-Bldg Const.. 3 Credits.

Study of building systems as they relate to design and function of interior spaces: mechanical, electrical, HVAC systems. Environmental concerns: energy, daylighting, acoustics. Prerequisite: IntD 4103. (Spring).

INTD 4133. Textiles & Finish Materials. 3 Credits.

Textiles and finish materials for commercial and residential interiors. Physical properties, application, testing, regulations, and specification. (Fall).

INTD 4133W. Textiles & Finish Materials. 3 Credits.

INTD 4134. Internship. 3 Credits.

Application of knowledge and skills in project-based setting for a local firm. Appropriate placement and sponsor participation required prior to registration. Topics include business procedure and practice, legal and ethical issues, and designer-client-contractor relations. Prerequisite: IntD 4103 and permission of instructor. (Spring).

INTD 4134W. Internship. 3 Credits.

INTD 4140. Adv. Computer-Aided Drafting. 3 Credits.

Application of advanced computer graphics using 3-D geometric modeling application programs to examine form and space in a practical in-depth exploration. Prerequisite: IntD 4113. (Spring).

INTD 6104. Grad Studio III: Institutional. 3 Credits.

Multifaceted and complex problems in healthcare and institutional design. Further exploration of design theory, practical application and guidelines, and development of advanced studio work. Prerequisite: IntD 6103, 6113, and 6121. (Spring).

INTD 6105. Graduate Project. 3 Credits.

Capstone studio. Application of design skills and knowledge, individual development of the design process, problem-solving skills, and evaluation and defense of the project. Admission by permission of instructor. (Fall).

INTD 6112. Presentation Techniques. 3 Credits.

Development of multimedia techniques in rendering. Advanced three-dimensional drawing using rapid visualization techniques, sketching, and constructed drawings. Prerequisite: IntD 6101, 6111. (Spring).

INTD 6124. Research Seminar. 1-3 Credits.

Application of advanced topics in design theory; research methodology applied to development of the graduate project. Prerequisite: IntD 6123. (Summer).

INTD 6150. Special Topics. 3 Credits.

A theoretical and practical in-depth exploration of a specific area of interior design. Topic to be announced in the Schedule of Classes. Prerequisite: permission of instructor.

INTD 6160. Individual Problems & Research. 1-6 Credits.

Independent research on selected topic. Research proposal must be approved by faculty prior to registration. May be repeated for credit with permission. Admission by permission of instructor.

INTERNATIONAL AFFAIRS (IAFF)

Explanation of Course Numbers

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

IAFF 1005. Introduction to International Affairs: A Washington Perspective. 4 Credits.

Open only to first-year students in the Elliott School. An introduction to the study of international affairs, integrating material designed to orient students to the Elliott School, the University, and the city of Washington. Students who have transferred into the Elliott School should take PSC 1003 instead of this course. Credit may not be earned for both IAFF 1005 and PSC 1003.

IAFF 2040. Basic Topics in International Affairs. 0-3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Primarily for Elliott School freshmen and sophomores.

IAFF 2090. Latin America: Problems and Promise. 3 Credits.

An interdisciplinary course in Latin American studies designed to introduce undergraduates to the diverse, rich, and complex history, politics, economy, culture, and society of Latin America.

IAFF 2091. East Asia-Past and Present. 3 Credits.

An interdisciplinary course offering a comprehensive and integrated introduction to the civilizations and present problems of East Asia.

IAFF 2092. Russia and Eastern Europe: An Introduction. 3 Credits.

A multidisciplinary introduction to the lands and cultures of the former Soviet Union and Central and Eastern Europe. The main emphasis is on history and politics, with attention also given to economics, trade, geography, military matters, literature, and the media.

IAFF 2093. Africa: Problems and Prospects. 3 Credits.

Aspects of the environment, culture, and politics as they affect the present and anticipated future of Africa.

IAFF 2094. Europe: International and Domestic Interactions. 3 Credits.

A multidisciplinary view of contemporary Europe, including the E.U. states, other states of Eastern Europe, and Turkey. The widening processes of political, judicial, economic, cultural, and security integration. Prerequisite: IAFF 1005, PSC 1001.

IAFF 2190. Special Topics. 3 Credits.**IAFF 2190W. Special Topics. 3 Credits.****IAFF 3155. Spain in the Modern World. 3 Credits.****IAFF 3171. U.S. Foreign Policy Summer Program. 3-4 Credits.**

The institutions and ideas that shape U.S. foreign policy, including the U.S. Congress and administration, foreign embassies, international organizations, think tanks, interest groups, and media outlets. A separate section of the course covers issues of reporting on foreign policy issues. The program has special admission criteria.

IAFF 3179. Special Topics in Science and Technology Policy. 0-3 Credits.

The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3180. Special Topics in Security Policy. 0-3 Credits.

The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3180W. Spec Topics in Security Policy. 0-3 Credits.

The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3181. Special Topics in Conflict Resolution. 0-3 Credits.

The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3182. Special Topics in Foreign Policy. 0-3 Credits.

The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3183. Special Topics in Development Policy. 0-3 Credits.

The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3184. Special Topics in Trade and International Economic Policy. 0-3 Credits.

The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3185. Special Topics in European and Eurasian Studies. 0-3 Credits.

The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3186. Special Topics in Asian Studies. 0-3 Credits.

The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3187. Special Topics in Latin American and Hemispheric Studies. 0-3 Credits.

The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3188. Special Topics in Middle East Studies. 0-3 Credits.

The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3189. Special Topics in African Studies. 0-3 Credits.

The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3190. Special Topics in International Affairs. 0-3 Credits.

The course may be repeated for credit provided the topic differs. Prerequisite: IAFF 1005 or PSC 1003; junior or senior standing.

IAFF 3190W. Special Topics. 0-3 Credits.

IAFF 3192. ESIA Undergraduate Scholars Workshop. 1 Credit.

For Elliott School juniors and seniors who have applied to and been accepted into the ESIA Undergraduate Scholars Program. Students fine-tune their research questions, conduct the bulk of their research, draft abstracts, and outline their papers. See <http://elliott.gwu.edu/academics/ugrad/scholars/index.cfm> for more information. (Fall).

IAFF 3193W. ESIA UG Scholars Course. 3 Credits.

IAFF 3195. Internship. 0-3 Credits.

Internships in public, private, and nonprofit organizations concerned with international affairs. Students must meet selection criteria, find a sponsoring faculty member, and receive approval from the Elliott School Office of Academic Advising and Student Services. May be repeated for up to 6 credits with permission.

IAFF 3198. Independent Study and Research. 1-3 Credits.

For juniors and seniors with a minimum grade-point average of 3.0. Students must find a sponsoring faculty member and receive approval from the Elliott School Office of Academic Advising and Student Services. May be repeated for credit with permission of the dean.

IAFF 4191. Senior Seminar. 3 Credits.

For Elliott School seniors only. Intensive readings, discussion, research, and writing. Students must meet selection criteria and receive approval from the Elliott School Office of Academic Advising and Student Services.

IAFF 4191W. Senior Seminar. 3 Credits.

For Elliott School seniors only. Intensive readings, discussion, research, and writing. Students must meet selection criteria and receive approval from the Elliott School Office of Academic Advising and Student Services.

IAFF 4199. Senior Thesis. 3 Credits.

For Elliott School seniors only. Students must meet selection criteria, find a sponsoring faculty member, and receive approval from the Elliott School Office of Academic Advising and Student Services.

IAFF 5700. Special Topics. 3 Credits.

IAFF 6101. IA Cornerstone. 3 Credits.

Political, economic, and social theories of international relations and their applications to practice.

IAFF 6102. Global Gender Policy. 3 Credits.

An interdisciplinary and comparative approach to examination of policies targeted at achieving gender equality and of the costs of policies that are not gender-specific. Topics include poverty reduction, environmental sustainability, social justice, global and personal security, and prevention of and responses to extreme calamities and crises. How global gender policies are rationalized, adopted, implemented, and assessed. Focus on "what works" and why it works; gaps that remain in achieving global gender equality. (Fall).

IAFF 6118. IAFF6119201303. 0-3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6121. International Development Studies Cornerstone. 3 Credits.

Introduction to the concepts and methods of international development. Open only to M.A. candidates in international development studies.

IAFF 6122. Development Policy and Practice. 3 Credits.

An overview of economic development in developing countries; key challenges of economic growth, poverty alleviation, and development.

IAFF 6136. Gender and Development. 3 Credits.

Theoretical approaches to gender and development and debates over how to promote gender equity and rights across the gender spectrum. Key issues in gender and development and the range of actors who are involved in promoting gender equality. General patterns, lessons with broader applications, and challenges and differences within and between societies. (Fall).

IAFF 6137. Development Studies Pre-Capstone Workshop. 1 Credit.

Students work in teams to find a suitable client and negotiate a project, with detailed terms of reference and a work plan to be carried out in the spring semester. Open only to M.A. candidates in international development studies.

IAFF 6138. Special Topics in International Development Studies. 0-3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6139. International Development Studies Capstone. 3 Credits.

A project-oriented development course abroad, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in international development studies.

IAFF 6141. International Science and Technology Policy Cornerstone. 3 Credits.

Introduction to the study of international science and technology policy; focus on policy issues that arise from interactions between scientific and technological developments and government activity.

IAFF 6142. Technology Creation/Diffusion. 3 Credits.

Examination of the relationship between invention (inception), innovation (first application), and dissemination (diffusion) of technological knowledge; focus on the technological environment prevailing in the major developed market economies.

IAFF 6145. U.S. Space Policy. 3 Credits.

Origins, evolution, current status, and future prospects of U.S. space policies and programs. U.S. civilian, military, and national security space programs and space activities of the U.S. private sector. (Fall, spring, and summer).

IAFF 6146. Space Law. 3 Credits.

The underlying principles of international space law, with emphasis on issues of particular concern as the uses of space increase for exploration, commerce, and security.

IAFF 6148. Special Topics in Space Policy. 3 Credits.

Topic announced in the Schedule of Classes.

IAFF 6151. Environmental Policy. 3 Credits.

Examination of public policies designed to protect the human and physical environment; focus on the ways science and technology can simultaneously create new environmental problems and contribute to their mitigation and prevention.

IAFF 6153. Science, Technology, and National Security. 3 Credits.

The contributions of science and technology to U.S. security in military, intelligence, and homeland security activities.

IAFF 6158. Special Topics in International Science and Technology Policy. 0-3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6160. Defense Policy and Program Analysis. 3 Credits.

Examination of how national security policy is formulated and translated into a defense budget, program priorities, and force structure. Focus on nuclear forces.

IAFF 6163. Transnational Security. 3 Credits.

Overview of security concerns that transcend state borders, including terrorism, drug trafficking, organized crime, weapons proliferation, migration, and environmental degradation.

IAFF 6165. Fundamentals of Intelligence. 3 Credits.

The institutional structure of the intelligence community; the intelligence production cycle, including tasking, collection, analysis, covert action, and counterintelligence; and relations between the intelligence and policy communities.

IAFF 6167. Defense Policy & Program Analysis II. 3 Credits.

Analysis of the development of national security policy and analytic techniques to derive a defense program and force structure from it. Special attention to general-purpose forces.

IAFF 6169. Homeland Security. 3 Credits.

The central missions of a homeland security agency: domestic security, emergency preparedness, technology policy, timely intelligence, counterintelligence, and preemptive actions. How the U.S. has dealt historically with internal security matters; contemporary approaches to security problems.

IAFF 6171. Introduction to Conflict Resolution. 3 Credits.

Interstate disputes, contemporary civil wars, complex political emergencies, and other forms of organized violence.

IAFF 6173. Security and Development. 3 Credits.

Consideration of the relationship between security and development reflecting the growing interest from the security field in issues that have traditionally been the purview of development, and vice versa.

IAFF 6175. Nuclear Weapons. 3 Credits.

The technology and politics associated with nuclear weapons. Strategy and deterrence, force planning and operations, and the prospect of nuclear terrorism.

IAFF 6186. Special Topics in Security Policy Studies. 3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6189. Security Policy Studies Capstone. 3 Credits.

A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in security policy studies.

IAFF 6198. Special Topics in International Trade and Investment Policy. 0-3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6199. International Trade and Investment Policy Capstone. 1 Credit.

A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in international trade and investment policy.

IAFF 6208. Special Topics in Global Communication. 0-3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6209. Global Communication Capstone. 3 Credits.

A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in global communication. (Spring).

IAFF 6211. MIPP Practicum. 3 Credits.

For Master of International Policy and Practice degree candidates only.

IAFF 6302. Taiwan: Internal Development and Foreign Policy. 3 Credits.

The social, political, and economic development in Taiwan since World War II; Taiwan's foreign affairs.

IAFF 6305. U.S.-South Asia Relations. 3 Credits.

The nature of challenges and opportunities facing the South Asia region and the U.S. policy response. The rise of India as a global actor; relations between India and Pakistan; political transformation in the countries of the region, including Nepal and Sri Lanka.

IAFF 6308. Intl Relations of South Asia. 3 Credits.

IAFF 6318. Special Topics in Asian Studies. 0-3 Credits.

Topics announced in Schedule of Classes.

IAFF 6321. European and Eurasian Studies Cornerstone. 3 Credits.

Survey of current research on Europe and Eurasia. Research paper required. Required of M.A. candidates in European and Eurasian studies; open to others with permission of the instructor.

IAFF 6338. Special Topics in European and Eurasian Studies. 0-3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6339. European and Eurasian Studies Capstone. 3 Credits.

Survey of current research on Europe and Eurasia. Research paper required. Required of M.A. candidates in European and Eurasian studies; open to others with permission of the instructor.

IAFF 6341. Latin American and Hemispheric Studies Cornerstone. 3 Credits.

Multidisciplinary foundation course for the Latin American and hemispheric studies program.

IAFF 6342. Drug Trafficking in the Americas. 3 Credits.

A historical, comparative, and contemporary picture of drug trafficking in the Americas and the anti-narcotics policies to combat this trade.

IAFF 6343. Indigenous Social Movements. 3 Credits.

IAFF 6357. Pre-Capstone Workshop. 1 Credit.

IAFF 6358. Special Topics in Latin American and Hemispheric Studies. 0-3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6359. Latin American and Hemispheric Studies Capstone. 3 Credits.

A project-oriented course, designed to apply the skills and synthesize the knowledge that students have acquired in their graduate study. Open only to M.A. candidates in Latin American and hemispheric studies.

IAFF 6361. Middle East Studies Cornerstone. 1 Credit.

Multidisciplinary foundation course for the Middle East studies program. Introduction to key issues.

IAFF 6362. Regional Security in Middle East. 3 Credits.

The nature, elements, and future of security in the Middle East region. Various analytical frameworks are examined to consider the interplay of national interests, ideology, and regionalism. Issues in regional security.

IAFF 6363. Political Economy/Middle East. 3 Credits.

Current political economy of the Middle East, including an overview of Islamic economic concepts and political organizations.

IAFF 6364. Religion and Society in the Modern Middle East. 3 Credits.

Comparative overview, both historical and current, of religious and social trends in the Middle East.

IAFF 6378. Special Topics in Middle East Studies. 0-3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6379. Middle East Studies Capstone. 3 Credits.

A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to M.A. candidates in Middle East studies.

IAFF 6501. Quant Analysis Int'l Aff Prac. 3 Credits.

Overview of quantitative measurement, data summary, statistical inference, and elementary modeling such as linear regression.

IAFF 6502. Professional Skills I. 1 Credit.

Short courses that focus on developing specialized skills for international affairs professionals. Topics announced in the Schedule of Classes.

IAFF 6503. Professional Skills II. 1 Credit.

Continuation of IAFF 6502. Short courses that focus on developing specialized skills for international affairs professionals. Topics announced in the Schedule of Classes.

IAFF 6504. Intermediate Conversation. 1 Credit.

Short courses designed to develop professional language skills for international affairs students. Specific languages announced in the Schedule of Classes.

IAFF 6505. Elliott School Seminars. 0-3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6515. Graduate Internship in International Affairs. 0 Credits.

Limited to Elliott School M.A. degree candidates. Internship and research paper involving experience at an international organization or with international issues.

IAFF 6516. Independent Study and Research. 1-3 Credits.

Limited to Elliott School M.A. degree candidates. Written permission of instructor required.

IAFF 6517. Independent Study and Research. 1-3 Credits.**IAFF 6521. U.S. Foreign Policy Summer Program. 3-4 Credits.**

The institutions and ideas that shape U.S. foreign policy, including the U.S. Congress and administration, foreign embassies, international organizations, think tanks, interest groups, and media outlets. A separate section of the course covers issues of reporting on foreign policy issues.

IAFF 6898. Capstone Workshop. 1 Credit.

The first part of a two-semester project that addresses a concrete policy problem or issue in international affairs. In small teams, students refine the policy question of the capstone project, develop a research strategy, select appropriate research methods, and begin research. (Fall and spring).

IAFF 6899. Capstone Course. 3 Credits.

Completion of the capstone sequence by conduct of the group's research, completion of the capstone report, and oral presentation of research findings and recommendations. Prerequisites: IAFF 6898. (Fall and spring).

IAFF 6998. Thesis. 3 Credits.

Open to Elliott School M.A. candidates who have selected the thesis option.

IAFF 6999. Thesis. 3 Credits.

Open to Elliott School M.A. candidates who have selected the thesis option.

INTERNATIONAL BUSINESS (IBUS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

IBUS 3001. Introduction to International Business. 3 Credits.

The international business environment, including social, cultural, political, technological, and institutional domains. Multinational corporation strategic imperatives and organizational challenges, including financial, marketing, human resources, and other aspects of management. Prerequisite: ECON 1011- ECON 1012; prerequisite or corequisite: BADM 2201 or ECON 2181 or ECON 2182.

IBUS 3001W. Intro-International Business. 3 Credits.

The international business environment, including social, cultural, political, technological, and institutional domains. Multinational corporation strategic imperatives and organizational challenges, including financial, marketing, human resources, and other aspects of management. Prerequisite: ECON 1011- ECON 1012; prerequisite or corequisite: BADM 2201 or ECON 2181 or ECON 2182.

IBUS 3201. International Marketing Management. 3 Credits.

Introduction to international marketing analysis and strategy, and the dynamic nature of international markets. Analysis of different types of international markets and formulation of strategies at the entry and global stages. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 3301. International Business Finance. 3 Credits.

Analysis of the international economic environment and its influence on corporate financial management of international operations. Prerequisite: IBUS 3001, except by permission of instructor, and BADM 3501.

IBUS 4202. Regional Strategy for Multinationals. 3 Credits.

The business, economic, investment, and market environments in different world regions. A regional strategy framework for responding to business opportunities in regional markets. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4203. Foreign Market Analysis. 3 Credits.

Project course involving market research for target market selection, market entry strategy, in-country marketing plan, and recommendations for strategy implementation in the target country. Focus on consulting process as ancillary component. Prerequisite: IBUS 3001, except by permission of instructor, and IBUS 3201.

IBUS 4302. International Banking. 3 Credits.

Theory and practice of international banking; analysis of international commercial and investment banking from a management perspective; subjects include current international monetary and financial environment, money and capital markets, and topical problems of international banking from a management perspective. Prerequisite: IBUS 3001, except by permission of instructor, and IBUS 3301.

IBUS 4303. International Monetary and Financial Issues. 3 Credits.

Theory and practice of international banking; analysis of international commercial and investment banking from a management perspective; subjects include current international monetary and financial environment, money and capital markets, and topical problems of international banking from a management perspective. Prerequisite: IBUS 3001, except by permission of instructor, and IBUS 3301.

IBUS 4401. Managing the Multinational Enterprise. 3 Credits.

The changing nature of the international environment and the resulting effects on strategy of U.S. and foreign multinational corporations. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4402. Managing in Developing Countries. 3 Credits. Challenges of operating in developing countries. Cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private-public partnerships, competition, regulation, and global standards. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4402W. Managing-Developing Countries. 3 Credits. Challenges of operating in developing countries. Cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private-public partnerships, competition, regulation, and global standards. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4900W. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4995. Independent Study. 1-12 Credits.

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 6201. International Marketing. 3 Credits.

International marketing strategy formulation, including market entry, local market development, and global market integration. The strategic challenge of global marketing formulation and local market adaptation, with attention to market conditions in mature, new growth, and emerging market environments. Emerging trends in international marketing. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6202. Regional Strategy for Multinationals. 0-3 Credits.

Development of a framework to understand dynamic business, cultural, and economic environments in Asia and Latin America. Regional business strategies of multinational companies from outside and within Asia and Latin America that respond to business opportunities and challenges in these regions. (Spring).

IBUS 6290. Special Topics. 0-3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6297. International Management Experience. 1-6 Credits.

Same as FINA 6297/ MGT 6297/ MKTG 6297/ SMPP 6297. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284. May be repeated for credit.

IBUS 6301. International Business Finance. 3 Credits.

Analysis of major issues and developments in the international financial environment and their impact on multinational corporations and financial institutions. Prerequisite: MBAD 6234 and MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6302. Seminar: International Banking. 3 Credits.

Evolution in international banking and other international financial institutions. Functioning of international banking operations, public policy issues and regulatory issues in international banking, and the effect of international banks on national monetary policies. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6303. External Development Financing. 3 Credits.

Institutions, instruments, and theory of external development financing; financial flows to developing countries; development finance and the role of international and regional development banks; policies, methods, and practices of the World Bank, the IMF, and others; technical assistance, training, capacity building, and role of institutions in sustained development. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6304. Currency and Banking Crises in Emerging Markets. 3 Credits.

Public policy issues surrounding financial crises in emerging market economies. Comparison of the economic reasons for the crises as well as the responses of various governments and international financial institutions. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6305. Global Investment Banking. 3 Credits.

Examination of investment banking as practiced in a global context from a strategic perspective using case studies and readings. Topics covered include securities underwriting and derivatives instruments, risk management, and business development strategies. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6306. Seminar: International Financial Markets. 3 Credits.

Survey of international financial markets, focusing on structure, operations, and pricing. Primary emphasis on markets for foreign exchange, Eurocurrency, international bonds, and commodities. Derivatives markets, especially swaps and options embedded in international securities issues. Prerequisite: IBUS 6301 and MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6307. International Portfolio Management. 3 Credits.

Theory and practice of international investment. Portfolio construction and optimization. Effects of exchange rate changes on portfolio risk and return. International asset pricing models and trading institutions. Prerequisite: MBAD 6234; either MBAD 6243 or ECON 6284.

IBUS 6308. Intl Reporting and Contrl. 1.5 Credit.

IBUS 6309. International Accounting. 1.5 Credit.

IBUS 6310. Intl Fin. Reporting Standards. 1.5 Credit.

IBUS 6401. International Business Strategy. 3 Credits.

Discussion of the changing nature of the international environment and the resulting impact on strategy of both U.S. and foreign multinational corporations. Various aspects of strategy are considered, including marketing, production, and financial strategy. The focus of discussion is at the company level. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6402. Managing in Developing Countries. 3 Credits.

Challenges of operating in developing countries. Cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private-public partnerships, competition, regulation, and global standards. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6403. International Business Negotiations. 3 Credits.

Theories and application in International Business Negotiations (IBN). Formulation of concepts and frameworks; development of systematic approaches to planning for and conducting IBN. Integration of functional, environmental, and institutional contexts facing negotiators internationally. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6404. New Global Competitive Framewk. 3 Credits.

How industries develop sustained competitive advantages within the global framework. The European Union's "single market" and the Economic-Monetary Union; the transformation of formerly centrally planned economies; the changing Japanese economy and emerging Pacific Basin, with implications for the U.S. economy, industries, and firms. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6405. Legal Aspects of International and Multinational Business. 3 Credits.

Legal environment of international and multinational business including legal systems, antitrust laws, regulation of direct investment, international arbitration and expropriation; topics of current interest. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6995. Directed Readings and Research. 3 Credits.

Supervised readings or research in selected fields within business administration. Admission by prior permission of instructor. May be repeated once for credit. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 6999. Thesis Seminar. 3 Credits.

Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 8311. Seminar: Public-Private Sector Institutions and Relationships. 3 Credits.

An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311.

IBUS 8361. Colloquium on International Business. 3 Credits.

Examination of selected topics in international business, with emphasis on major new theoretical and empirical developments. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 8397. Doctoral Seminar. 1-3 Credits.

Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 8900. Thesis Research. 3 Credits.

Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 8998. Advanced Readings and Research. 1-12 Credits.

Limited to doctoral candidates preparing for the general examination. May be repeated for credit. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

IBUS 8999. Dissertation Research. 1-12 Credits.

Limited to doctoral candidates. May be repeated for credit. Prerequisite: MBAD 6242 and MBAD 6243 or ECON 6283 or ECON 6284.

ITALIAN (ITAL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ITAL 1001. Basic Italian I. 4 Credits.

Handling the immediate context of daily experience in spoken and written Italian: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee.

ITAL 1002. Basic Italian 2. 4 Credits.

Speaking and writing in Italian about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: ITAL 1001 . Laboratory fee.

ITAL 1003. Intermediate Italian I. 3 Credits.

Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (repeating or relaying messages, giving reports, summarizing). Prerequisite: ITAL 1002 . Laboratory fee.

ITAL 1004. Intermediate Italian II. 3 Credits.

Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: ITAL 1003 . Laboratory fee.

ITAL 2005. Language, Culture & Society I. 3 Credits.

Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: ITAL 1004. Laboratory fee.

ITAL 2006. Language, Culture & Society II. 3 Credits.

Continued expansion of the range and complexity of conversational skills and further development of the writing of effective expository prose on a broad range of subjects. Short literary texts serve as the basis for oral discussion, analytical reading, and writing brief critical essays. Prerequisite: ITAL 2005. Laboratory fee.

ITAL 3010. Advanced Italian Grammar and Style. 3 Credits.

Compositions, drills, dictations. Translations into Italian. Study of vocabulary and syntax with emphasis on stylistic devices. Prerequisite: ITAL 2006.

ITAL 3100. Introduction to Italian Literature. 3 Credits.

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. Emphasis on study of Italian literature in its cultural context. Close reading approach and introduction to literary vocabulary. Prerequisite: ITAL 2006 .

ITAL 3100W. Introduction to Italian Literature. 3 Credits.

ITAL 3201. History of Italian Literature from the Middle Ages Through the 17th Century. 3 Credits.

Lecture and discussion in Italian. Development of genre and movements. Selected readings across these periods plus reading of complete texts of epics, essays, novels, and plays. Prerequisite: ITAL 2006 .

ITAL 3202. History of Italian Literature from the 18th Through the 20th Century. 3 Credits.

Lecture and discussion in Italian. Philosophical and literary movements of the modern period. Selected readings across the period plus the reading of complete texts of novels and drama. Prerequisite: ITAL 2006 .

ITAL 3202W. History of Italian Literature from the 18th Through the 20th Century. 3 Credits.

ITAL 3290. Textual Analysis. 3 Credits.

Close examination of critical methods and vocabulary used in literary study as applied to Italian Literature. Attention to linguistic and stylistic difficulties in textual analysis. Prerequisite: ITAL 3100 .

ITAL 3300. Italian Literature and Culture in Translation. 3 Credits.

Dynamics of Italian-speaking societies and their cultures studied through literature, art, or film. Topics vary. Readings and lectures in English. The course may be repeated for credit. A laboratory fee may be required. (Fall).

ITAL 3600. Special Topics in Italian Literature and Culture. 3 Credits.

May be repeated for credit provided the topic differs.

ITAL 4183. History of Italian Film. 3 Credits.

Study of Italian films, directors, and styles, with films examined as aesthetic objects in their own right and in relation to the wider social and cultural environment. The verbal and visual language necessary for decoding and describing film. The course is conducted in English.

ITAL 4380. Italian Journeys Medieval to Postmodern. 3 Credits.

Italy's dual role as the home of legendary travelers and the destination for an endless stream of tourists. The reality and metaphor of travel viewed through travel diaries, ship logs, letters to patrons, maps, travel guides, poetry, and film. The course is conducted in English.

ITAL 4500. Studies in Medieval and Early Renaissance Literature. 3 Credits.

Works by Dante, Petrarca, and Boccaccio. Emphasis on structure, rhetorical features, and problems of narrative organization. Specific attention to historical and ideological aspects of the works as well as to cultural influence. Prerequisite: ITAL 3290 .

ITAL 4560. Modern Italian Novel. 3 Credits.

A reading of the most important Italian novelists of the 19th and the 20th centuries: Manzoni, Verga, Bassani, Calvino, Eco, Sanguinetti. Study of the relations of each work to its social and cultural context and to the novel as a genre. Prerequisite: ITAL 3290 .

ITAL 4800. Independent Study. 1-4 Credits.

Admission by permission of department chair and instructor. May be repeated for credit.

JAPANESE (JAPN)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

JAPN 1000. Dean's Seminar. 3 Credits.**JAPN 1001. Beginning Japanese I. 4 Credits.**

Fundamentals of grammar and pronunciation, with graded reading and practice in writing. Laboratory fee.

JAPN 1002. Beginning Japanese II. 4 Credits.

Continuation of JAPN 1001. Fundamentals of grammar and pronunciation, with graded reading and practice in writing. Laboratory fee.

JAPN 1005. Intensive Beginning Japanese. 8 Credits.

Intensive beginning course equivalent to JAPN 1001- JAPN 1002. Laboratory fee.

JAPN 2003. Intermediate Japanese I. 4 Credits.

Continuation of grammar, with emphasis on speaking, reading, and writing. Prerequisite: JAPN 1002 or JAPN 1005, or approval of instructor. Laboratory fee.

JAPN 2004. Intermediate Japanese II. 4 Credits.

Continuation of JAPN 2003. Continuation of grammar, with emphasis on speaking, reading, and writing. Prerequisite: JAPN 2003, or approval of instructor. Laboratory fee.

JAPN 2006. Intensive Intermediate Japanese. 8 Credits.

Intensive intermediate course equivalent to JAPN 2003- JAPN 2004. Prerequisite: Japn 1002 or JAPN 1005. Laboratory fee.

JAPN 3105. Intermediate Japanese III. 3 Credits.

Continuation of reading of texts, writing of short pieces, conversation, systematic review of grammar. Prerequisite: JAPN 2004 or JAPN 2006; or approval of instructor. Laboratory fee.

JAPN 3106. Intermediate Japanese IV. 3 Credits.

Continuation of JAPN 3105. Continuation of reading of texts, writing of short pieces, conversation, systematic review of grammar. Prerequisite: Japn 3105; or approval of instructor. Laboratory fee.

JAPN 3111. Japanese Literature in Translation. 3 Credits.

An introductory survey of Japanese literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The pre-modern period.

JAPN 3112. Japanese Literature in Translation. 3 Credits.

Continuation of JAPN 3111. An introductory survey of Japanese literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The modern period.

JAPN 3132. Tale of Genji: Love & Politics. 3 Credits.**JAPN 3162. Japanese Culture Through Film. 3 Credits.**

Survey of the Japanese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from premodern times to the modern era. Lectures and discussion in English.

JAPN 4107. Readings in Modern Japanese I. 3 Credits.

Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: JAPN 3106 or approval of instructor.

JAPN 4108. Readings in Modern Japanese II. 3 Credits.

Continuation of JAPN 4107. Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: JAPN 3106 or approval of instructor.

JAPN 4109. Introduction to Bungo, Literary Japanese. 3 Credits.

Introduction to Bungo, the literary Japanese used in official government documents up to World War II, newspapers and journals through the Meiji period, and literature from the prose of the Tales of Ise to the poetry of Tawara Machi. Prerequisite: JAPN 3106 or approval of instructor.

JAPN 4110. Readings in Classical Japanese. 3 Credits.

Readings in premodern texts in Japanese literature, history, and philosophy. Prerequisite: JAPN 4109 or approval of instructor.

JAPN 4121W. Advanced Conversation and Composition I. 3 Credits.

Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: JAPN 3106 to JAPN 4121.

JAPN 4122W. Advanced Conversation and Composition II. 3 Credits.

Continuation of JAPN 4121. Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: JAPN 4121.

JAPN 4185. Directed Reading I. 3 Credits.

Reading of material in the student's field of interest. Admission by permission of instructor.

JAPN 4186. Directed Reading II. 3 Credits.

Continuation of JAPN 4185. Reading of material in the student's field of interest. Admission by permission of instructor.

JAPN 4198. Proseminar: Readings for the Major in Japanese Language and Literature. 3 Credits.

Recommended for all majors. Preparation for advanced research in Japanese sources. Practice in consulting Japanese reference material and translating sources for writing in English. Seminars on advanced reading, translation, and critical methodology. Prerequisite: JAPN 3106.

JAPN 4199. Proseminar: Readings for the Major in Japanese Language and Literature. 3 Credits.

Continuation of JAPN 4198. Recommended for all majors. Preparation for advanced research in Japanese sources. Practice in consulting Japanese reference material and translating sources for writing in English. Seminars on advanced reading, translation, and critical methodology. Prerequisite: JAPN 4198.

JUDAIC STUDIES (JSTD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

JSTD 4018. Senior Thesis. 1 Credit.

For Judaic studies majors. Students choose a topic in any major subfield of Judaic studies, select a faculty advisor who specializes in the subfield, conduct research, and produce an annotated bibliography and a proposal that previews the main arguments of the thesis. (Fall and spring).

JSTD 4019. Senior Thesis. 3 Credits.

Continuation of JSTD 4018. For Judaic studies majors. Completion of the thesis and oral presentation before Judaic studies students and faculty. (Fall and spring).

JSTD 6001. Topics in Judaic Studies. 3 Credits.**JSTD 6097. Independent Readings/Research. 1-3 Credits.**

Written permission of instructor required. May be repeated for credit with permission.

JSTD 6201. Jewish Life in Contemporary America. 3 Credits.**JSTD 6211. Displaying Jewish Culture: Landmark Exhibitions on Judaism and the Jewish Experience. 3 Credits.****JSTD 6298. Behind the Scenes: The Jewish Arts World in Contemporary Perspective. 3 Credits.**

KOREAN (KOR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

KOR 1001. Beginning Korean I. 4 Credits.

Fundamentals of grammar and pronunciation, with graded speaking, reading, and writing practice. Laboratory fee.

KOR 1002. Beginning Korean II. 4 Credits.

Continuation of KOR 1001. Fundamentals of grammar and pronunciation, with graded speaking, reading, and writing practice. Laboratory fee.

KOR 2003. Intermediate Korean I. 4 Credits.

Continuation of grammar, with emphasis on speaking, reading, and writing. Laboratory fee.

KOR 2004. Intermediate Korean II. 4 Credits.

Continuation of KOR 2003. Continuation of grammar, with emphasis on speaking, reading, and writing. Laboratory fee.

KOR 3105. Intermediate Korean III. 3 Credits.

Continuation of reading of texts, writing of short pieces, conversation, and systematic review of grammar, focusing on business Korean. Prerequisite: KOR 2004. Laboratory fee.

KOR 3106. Intermediate Korean IV. 3 Credits.

Continuation of KOR 3105. Continuation of reading of texts, writing of short pieces, conversation, and systematic review of grammar, focusing on business Korean. Prerequisite: KOR 3105. Laboratory fee.

KOR 3111. Korean Literature in Translation. 3 Credits.

An introductory survey of Korean literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The pre-modern period.

KOR 3112. Korean Literature in Translation. 3 Credits.

Continuation of KOR 3111. An introductory survey of Korean literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The modern period.

KOR 3123. Introduction to Korean Linguistics. 3 Credits.

The structure of the Korean language, including such topics as the structure of sounds and words, sentence meaning and structure, the writing system, adaptation of foreign vocabulary, pragmatics, variation, and change. Course conducted in English.

KOR 3124. Introduction to Korean Linguistics. 3 Credits.

Continuation of KOR 3123. The structure of the Korean language, including such topics as the structure of sounds and words, sentence meaning and structure, the writing system, adaptation of foreign vocabulary, pragmatics, variation, and change. Course conducted in English.

KOR 3162. Korean Culture through Film. 3 Credits.

The intersection of gender, class, and nation in contemporary society through the lens of Korean film. English subtitles; lectures and discussion in English. (Fall and spring).

KOR 4107. Readings in Modern Korean II. 3 Credits.

Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: KOR 3106 .

KOR 4108. Readings in Modern Korean II. 3 Credits.

Continuation of KOR 4107. Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: KOR 3106 .

LATIN (LATN)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LATN 1001. Beginning Latin I. 4 Credits.

Grammatical essentials of Latin, appropriate reading selections, development of English derivatives, introduction to Roman life and literature.

LATN 1002. Beginning Latin II. 4 Credits.

Continuation of LATN 1001. Grammatical essentials of Latin, appropriate reading selections, development of English derivatives, introduction to Roman life and literature.

LATN 2001. Intermediate Latin. 3 Credits.

Development of ability to read and understand Latin literature of moderate difficulty. Prerequisite: LATN 1001- LATN 1002 .

LATN 2002. Vergil's Aeneid. 3 Credits.

Significant passages of Vergil's famous epic in Latin; reading and discussion of the entire poem in translation. Prerequisite: LATN 2001 or permission of instructor.

LATN 2002W. Vergil's Aeneid. 3 Credits.

Significant passages of Vergil's famous epic in Latin; reading and discussion of the entire poem in translation. Prerequisite: LATN 2001 or permission of instructor.

LATN 3001. Major Latin Authors I. 3 Credits.

Selections from one or two major authors will be read each semester. May be repeated for credit. Prerequisite: LATN 2001, LATN 2002; or permission of instructor.

LATN 3001W. Major Latin Authors I. 3 Credits.

Selections from one or two major authors will be read each semester. May be repeated for credit. Prerequisite: LATN 2001, LATN 2002; or permission of instructor.

LATN 3002. Major Latin Authors II. 3 Credits.

Continuation of LATN 3001. Selections from one or two major authors will be read each semester. May be repeated for credit. Prerequisite: LATN 2001, LATN 2002; or permission of instructor.

LATN 3002W. Major Latin Authors II. 3 Credits.

Continuation of LATN 3001. Selections from one or two major authors will be read each semester. May be repeated for credit. Prerequisite: LATN 2001, LATN 2002; or permission of instructor.

LAW (LAW)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LAW 6202. Contracts I. 3,4 Credits.

Legal remedies of contracting parties, including damages in contract and quasicontract, specific performance, reformation, rescission, remedies in tort; acts creating and terminating contractual rights, including offer and acceptance, mistake, problems of proof; function of consideration; conditions; assignments; third-party beneficiaries; effect of changed circumstances; protection of the client's interests upon breach or threat of breach by the other party. Emphasis on problems of analysis, draftsmanship, adversary method. (Examination).

LAW 6203. Contracts II. 2,3 Credits.

Legal remedies of contracting parties, including damages in contract and quasicontract, specific performance, reformation, rescission, remedies in tort; acts creating and terminating contractual rights, including offer and acceptance, mistake, problems of proof; function of consideration; conditions; assignments; third-party beneficiaries; effect of changed circumstances; protection of the client's interests upon breach or threat of breach by the other party. Emphasis on problems of analysis, draftsmanship, adversary method. (Examination).

LAW 6206. Torts. 2-4 Credits.

Liability for harm to person or property. Intentional torts, negligence, nuisance, products liability, defamation, and invasion of privacy; fault and other bases for shifting losses; causation; damages; effects of liability insurance; problems under Federal Tort Claims Act. (Examination).

LAW 6208. Property. 4 Credits.

Basic concepts of personal property. Real property: historical background of the law of estates and conveyancing, types of estates, dower and curtesy, landlord and tenant relationship, concurrent estates, future interest at common law and after the Statute of Uses; introduction to modern conveyancing—the real estate contract, the deed, the recording system, methods of title assurance. (Examination).

LAW 6210. Criminal Law. 3 Credits.

An overview of the criminal justice system; dimensions of the problem of crime and goals of penal sanctions. An examination of what conduct should be made criminal and what sanctions should be applied. The theoretical anatomy of a criminal offense (elements of mens rea and actus reus), the general principles of criminal liability, and the various defenses. Special problems, such as conspiracy, inchoate crimes, causation, insanity, and complicity, are subjected to detailed analysis. (Examination).

LAW 6212. Civil Procedure I. 3-4 Credits.

The theory and practice of civil litigation. Analysis of the goals, values, costs, and tensions of an evolving adversarial system of adjudication. Examination of the rules and statutes that govern the process by which substantive rights and duties are enforced in our federal and state courts. Topics include the relationship of procedure to substantive law, the proper reach of judicial authority, pleading, motions practice, joinder of parties and claims, class actions, pretrial discovery, trial by jury, remedies, post-trial procedure, appeals, claim and issue preclusion, and alternative dispute resolution. (Examination).

LAW 6213. Civil Procedure II. 2-3 Credits.

The theory and practice of civil litigation. Analysis of the goals, values, costs, and tensions of an evolving adversarial system of adjudication. Examination of the rules and statutes that govern the process by which substantive rights and duties are enforced in our federal and state courts. Topics include the relationship of procedure to substantive law, the proper reach of judicial authority, pleading, motions practice, joinder of parties and claims, class actions, pretrial discovery, trial by jury, remedies, post-trial procedure, appeals, claim and issue preclusion, and alternative dispute resolution. (Examination).

LAW 6214. Constitutional Law I. 3 Credits.

Basic principles of U.S. constitutional law, with a focus on governmental powers and the role of the Supreme Court in interpreting and enforcing constitutional norms. The nature and scope of judicial review. The case and controversy requirement and other limitations on constitutional adjudication. Powers of the president and Congress; the separation of powers doctrine. Relationship of the national government to state governments and principles of federalism. The state action doctrine. (Examination).

LAW 6216. Legal Research and Writing. 2 Credits.

Introduction to use of a law library; research experience in primary, secondary, and specialized sources of law; practice in proper legal citation form. Instruction and practice in legal writing and analysis, with primary emphasis on legal memoranda. This course is graded on a letter-grade basis. Failure to complete the work in this course may result in a grade of F.

LAW 6217. Introduction to Advocacy. 2 Credits.

Instruction and experience in the research and writing of pretrial motions and appellate briefs, with emphasis on preparing and presenting arguments persuasively. Also instruction and practice in preparing and presenting oral arguments. This course is graded on a letter-grade basis. Failure to complete the work for this course may result in a grade of F.

LAW 6218. Professional Responsibility/Ethic. 2,3 Credits.

Ethical problems involved in civil and criminal counseling and litigation. Rules of Professional Conduct and legal discipline; roles of bar associations and courts in regulating lawyer conduct. Credit may not be earned for both Law 6218 and Law 6343. (Examination).

LAW 6230. Evidence. 3,4 Credits.

Policies, principles, standards, and rules governing the trial of civil and criminal cases in federal and state courts. Topics may include relevancy, the hearsay rule, direct and cross examination of witnesses, opinion, scientific evidence, impeachment, privileges, writings, real and demonstrative evidence, judicial notice, confrontation and compulsory process, and burdens of proof and presumptions. (Examination; Pierce—skills).

LAW 6231. Advanced Evidence Seminar. 2 Credits.

Advanced issues of evidence law, including jury decision making, eyewitness identification, predictions of future dangerousness, polygraph evidence, hypnotically refreshed testimony, recovered memory, syndrome and profile evidence, and complex issues of evidentiary privilege. (Research paper).

LAW 6232. Federal Courts. 3-4 Credits.

The relationship of the federal courts to Congress and to the states. Topics may include judicial review; standing and justiciability; congressional power to regulate jurisdiction; legislative courts; federal question, diversity, removal, civil rights, and habeas corpus jurisdiction; state sovereign immunity; Supreme Court appellate jurisdiction; abstention; federalism doctrines; and federal common law. (Examination).

LAW 6234. Conflict of Laws. 3 Credits.

Legal problems arising from occurrences transcending state or national boundaries; jurisdiction; foreign judgments; constitutional influences; theoretical bases of choice of law principles and their application to specific fields, including torts, contracts, property, family law, administration of estates, business associations. (Examination).

LAW 6236. Complex Litigation. 3 Credits.

Analysis and critique of complex civil litigation in the state and federal courts. Examination of complex joinder, the management of factually related claims in multiple venues, modern class-action practice, and current developments in the law of claim and issue preclusion. Other topics covered in some years include judicial supervision of plaintiff and defendant class actions; discovery and judicial control of large cases; the role of juries, magistrates, and masters in complex cases; and problems attending complex remedies such as the use of structural injunctions to reform public schools, hospitals, and prisons. (Examination).

LAW 6238. Remedies. 3 Credits.

The types and forms of relief that judges can award in civil litigation: decisional and statutory damages in contract, quasi contract, and tort, including tort reform and wrongful death; overcoming limitations of actions and releases; injunctions as provisional and final relief; equitable remedies, such as specific performance, rescission, and reformation; relief from fiduciaries; and tracing, constructive trusts, and equitable liens. (Examination).

LAW 6240. Litigation w/ Fed Govt.. 2-3 Credits.

Major substantive aspects of litigation with the federal government. Topics include analysis of statutory schemes that permit and limit judicial remedies against federal agencies and officials; nonstatutory remedies; judicial review; monetary recoveries from the United States; special rules, including those pertaining to discovery and application of equitable principles; and consideration of the continued vitality of federal sovereign immunity. (Take-home examination).

LAW 6246. Appellate Practice. 2 Credits.

This course will: (1) examine the vital role of federal and state appellate courts in our legal system; (2) explore the substantive and procedural elements of appellate litigation; and (3) engage students in the study of appellate practice through assignments involving research, writing, analysis, advocacy, and advice. (Writing assignments and oral argument) (Skills).

LAW 6248. Scientific Evidence Seminar. 2 Credits.

The use of scientific methods and the reliability of scientific principles in litigation. Topics include statistical proof, surveys, and epidemiological principles. Exploration of the admissibility and sufficiency of expert scientific testimony and evidence in light of recent Supreme Court cases, and application of these principles to lower court cases. Prerequisite: Law 6230. (Research paper).

LAW 6249. Civil Procedure Seminar. 2 Credits.

Selected topics in civil procedure to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6250. Corporations. 4 Credits.

Corporate law, with emphasis on operations and financing of corporations. Control of corporations, action by corporate directors, officers, shareholders. Control devices. Directors' and shareholders' duties of care and loyalty, insiders' transactions in shares of the corporation. Derivative suits, kinds of shares, dividends, corporate distributions. (Examination).

LAW 6252. Securities Regulation. 3 Credits.

Survey of federal and state laws governing the offering, distribution, and trading of securities. Focus on federal laws and regulations, in particular the Securities Act of 1933, the Securities Exchange Act of 1934, and the enforcement of these laws by the SEC and private parties. Prerequisite: Law 6250. (Examination or take-home examination at the instructor's discretion) 6254 General introduction to finance theory; problems in the issuance and reacquisition of corporate securities; analysis of various types of securities; problems involved in the use of debt and payment of corporate dividends; and financial analysis of mergers, acquisitions, recapitalizations, dissolutions, and liquidations. Prerequisite: Law 6250. (Examination) 6256 Federal and state regulation of corporate takeover bids and tender offers, including theories of corporate acquisitions, the Williams Act, and regulation of takeover tactics and defenses. Prerequisite: Law 6250. (Examination) 6259 Theoretical and practical perspectives on the venture capital and buyout marketplace. Legal, business, economic, and financial issues that are part of the legal documentation supporting venture capital and buyout transactions. Dynamics of organizing a venture capital or buyout fund; organizing, structuring, financing, managing, and exiting venture capital-backed companies. (Class projects and take-home examination).

LAW 6254. Corporate Finance. 2,3 Credits.**LAW 6256. Takeovers and Tender Offers. 2 Credits.****LAW 6258. Reg-Securities Mkts/Professnls. 2 Credits.****LAW 6259. Venture Capital Law. 2 Credits.**

LAW 6260. Reg-MutFunds&InvestAdvisers. 2 Credits.

Applicability of the Investment Company Act of 1940 to particular business activities that may bring an entity within the statutory definition of investment company; litigation as to fees; policy considerations relating to front-end loads; SEC regulations regarding advertising and promotion; restrictions on activities by affiliates; and current SEC disclosure requirements. Applicability of the Investment Advisers Act of 1940 to activities of individuals and entities; procedures for compliance; First Amendment issues raised by SEC enforcement actions; and civil liability under the antifraud provisions of the securities laws. Recommended: prior or concurrent enrollment in Law 6250 and 6252. (Examination or research paper with permission of the instructor).

LAW 6261. Regulation of Derivatives. 2 Credits.

Laws and regulations affecting derivatives trading, primarily financial futures and options markets. Jurisdiction of the Commodity Futures Trading Commission. Securities and commodities statutes and regulations; registration and regulation of commodity market participants; administrative and injunctive enforcement powers involving violations of the Commodity Exchange Act. Developments in self-regulation, and foreign market access. (Examination).

LAW 6262. Corporation Law Seminar. 2 Credits.

Analysis of the nature and role of the business corporation in the U.S. and transnational political economy; evolution of the corporation and the political economy; impact of technological change; reasons for and consequences of the growth of large corporate enterprises; role of entrepreneurs in the political economy; relationship of corporations to government and other centers of power. (Research paper).

LAW 6264. Securities Law Seminar. 2 Credits.

Selected topics in corporate and securities law practice and theory to be announced at the time of registration. Enrollment is limited. Prerequisite: Law 6250. (Research paper).

LAW 6266. Labor Law. 2,3 Credits.

Law governing labor-management relations, organizations and representation of employees, regulation of economic weapons, enforcement of collective bargaining agreements, inter-union and intra-union relations. (Examination).

LAW 6268. Employment Law. 2,3 Credits.

Individual rights and obligations in employment; survey of common law and statutory regulation of the individual employment relationship from its inception to its termination; emphasis on current developments such as wrongful discharge, medical screening, employer-provided health insurance and child care, occupational safety and health, workers' compensation, and retirement issues. (Examination or take-home examination).

LAW 6270. Labor & Emplmnt Abtrtn & Med. 2 Credits.**LAW 6272. Employee Benefit Plans. 2 Credits.**

Pre-ERISA benefit plans, the federal labor law governing those plans, and the conditions which led to the passage of ERISA and its effect on Taft-Hartley plans. Practical realities of collectively bargained benefit plans; preemption of state law and interplay of various federal laws; roles played by union and employer both in the context of individual bargaining of employee benefits and in the context of the employer and the union as trustee of a benefit plan; rights of participants and beneficiaries under the plan and under the collective bargaining agreement; rights and obligations of contributing employers; and termination and withdrawal issues, including plant shutdowns and bankruptcies. (Take-home examination).

LAW 6274. Labor Standards. 2 Credits.**LAW 6276. Labor/Employment Law Seminar. 2 Credits.****LAW 6280. Sales and Sales Financing. 2,3 Credits.**

Introduction to arrangements that improve access to credit for individuals, businesses, and governments. Traditional credit transactions, including signature loans and sales on general credit, loans supported by collateral, secured credit sales and floor plan financing, leases, consignments, and credit card transactions. More complex transactions involving the securitization of mortgages, credit card receivables and automobile paper (structured finance), as well as loans supported by stock, bonds, and deposit accounts. The structure of transactions consistent with Article 8 and 9 of the Uniform Commercial Code and the benefits and risks inherent in these arrangements. (Examination).

LAW 6281. Sec Trans & Comm Paper. 4 Credits.**LAW 6282. Commercial Paper-Payment Systm. 2,3 Credits.**

Classic view of negotiable instruments as codified by Article III of the Uniform Commercial Code. Check collection: the system in theory as expressed in Article IV of the Uniform Commercial Code and the system in practice; Federal Reserve regulations, Clearinghouse agreements, and automation systems. The dual banking system, work of the comptroller general and the Federal Reserve Board. Legal problems concerning interest and the checkless society. (Examination).

LAW 6283. E-Commerce. 2 Credits.

U.S. law affecting electronic commerce. Formation and terms of electronic contracts; voluntary compliance with regulations by e-merchants; mass marketing and consumer protection; payment on the Internet and cybercash; the jurisdiction of private parties to sue and of public authorities to regulate e-merchants; privacy; and intellectual property and taxation issues. (Examination).

LAW 6284. Creditor Rights/Debtor Protect. 3,4 Credits.

Creditors' remedies and debtors' protections under state law: writs of attachment, garnishment and execution, acquisition of liens and forced sales of property, self-help arrangements, and security agreements. Bankruptcy under federal law: who may file, the creation and administration of the bankruptcy estate, powers of the trustee, discharge of debt; rehabilitation plans for individuals under Chapter 13. (Examination).

LAW 6285. Business Bankruptcy & Reorg.. 3 Credits.

Legal and financial aspects of business reorganization under Chapter 11 of the Bankruptcy Code. Topics include, but are not limited to, the rights of secured and unsecured creditors, automatic stay, treatment of executory contracts, avoidance of pre-bankruptcy transactions (e.g., fraudulent conveyances and preferences), alternatives to reorganization, and the financial restructuring of businesses in Chapter 11. Prerequisite: Law 6250. (Examination or take-home examination and writing assignments).

LAW 6286. Consumer Protection Law. 3 Credits.

Common law doctrines and Federal Trade Commission case law and a variety of federal and state statutes and regulations thereunder. Statutes to be considered include Truth in Lending, Fair Credit Billing, Equal Credit Opportunity, Fair Debt Collection Practices, Magnuson-Moss Warranty Acts, Uniform Commercial Code provisions applicable to consumer sales and transactions, unfair trade practice laws, usury laws, and automobile "lemon" laws. Comparison of regulatory and remedial techniques available through case law, general statutory provisions, and specifically targeted technical statutes; public and private enforcement mechanisms, including litigation and alternative dispute resolution. (Examination or research paper with permission of the instructor).

LAW 6288. Commercial Law Seminar. 2 Credits.**LAW 6290. Banking Law. 3 Credits.**

Federal regulation of the financial services industry, especially commercial banks. Includes an analysis of the Federal Deposit Insurance Corporation as insurer of deposits, receiver, and liquidator of troubled banks; the role of the Comptroller of the Currency as the primary federal regulator of national banks, including the chartering function, bank examinations, analysis of classified loans, capital adequacy, and enforcement of substantive federal legislation; operation of the Federal Reserve System under the Bank Holding Company Act and the various substantive regulations such as Reg. B (equal credit opportunity), Reg. J (check collection), Reg. M (consumer leasing), Reg. Q (deposit rate regulation), Reg. O (insider loan limits), Reg. E (electronic funds transfer), and Reg. Z (truth in lending); geographic deregulation and the trend toward interstate banking; and an analysis of financial services product deregulation and unification of the industry along functional lines. (Examination; research paper or take-home examination, at the instructor's discretion).

LAW 6291. Money, Banking and Commerce. 2 Credits.**LAW 6292. Banking Law Seminar. 2 Credits.**

Selected topics in banking law to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6293. Admiralty. 2-3 Credits.

The maritime law applied in federal and state courts; admiralty jurisdiction and practice; litigation and arbitration; making uniform law by international convention. The U.S. law of seamen, shoreside workers, and personal injury and death in navigable waters; maritime liens and ship mortgages; carriage of goods by water; collisions at sea; salvage, general average, and limiting liability for private damage and environmental harms. (Examination).

LAW 6294. Uninc. Bus. Orgs. & Agency Law. 2-3 Credits.

Nature, formation, financing, operation, and termination of general partnerships, limited partnerships, limited liability partnerships (LLPs), and limited liability companies (LLCs). Major agency law issues, including the nature of an agency relation, fiduciary rights and duties, and the potential contractual and tort liability of principals to third parties for the actions and inactions of their agents and independent contractors. (Examination).

LAW 6295. Sports and the Law. 2,3 Credits.

Survey of sports regulation as it affects amateur and professional athletes. Topics include the NCAA regulatory structure; agent regulation; and legal representation of professional athletes in contract negotiation with sports franchises and in other contexts. (Research paper and class projects or examination).

LAW 6296. Business Planning. 2,3 Credits.

Integrated study of corporate, tax, accounting, and securities law aspects of the following: choice and formation of a closely-held business entity; structure of equity and control of a corporate entity; providing for changes in stock ownership; providing for the mid-life of a corporation, including buy-outs and recapitalizations; and analysis formulation of planning for a corporate acquisition. Analysis of hypothetical problems and practical solutions and insights into the practice of the business lawyer. Prerequisite: Law 6250 and 6300. Law 6302 or equivalent is recommended. Enrollment is limited. (Problem assignments) (Skills).

LAW 6298. Insurance. 2-3 Credits.

General liability, product liability, property, business interruption, fidelity, and coverage of directors and officers. The duty of insurance companies to defend their insureds and to settle cases brought against them. Mass tort liabilities and other severe liability exposure. General principles of law applicable to property-casualty insurance, insurance regulation, insurance bad faith, and reinsurance. (Examination).

LAW 6300. Federal Income Taxation. 3,4 Credits.

Survey of substantive provisions of federal income tax law, including concept of gross income, provisions affecting taxation of family and individual transactions, limitations on allowable deductions, sales and dispositions of property, problems of capital gains taxation, nontaxable exchanges. (Examination).

LAW 6302. Corporate Taxation. 3 Credits.

Continuation of Law 6300. Primary emphasis on corporate-shareholder relationships. Corporate dividends, redemptions of stock, stock dividends, bailouts, and dividends-in-kind. Federal income tax concerns involved in the formation of corporations, the sale of corporate businesses, mergers and acquisitions, and corporate divisions. Prerequisite: Law 6300. (Examination).

LAW 6303. Advanced Corporate Taxation. 2-3 Credits.**LAW 6304. Partnership Taxation. 2,3 Credits.**

Federal income tax consequences of operating businesses taxed as flow-through entities, including partnerships, limited liability companies, and S corporations. Allocation of partnership income and deductions among partners. Issues related to contributions to partnerships, distributions from partnerships, and acquisitions and dispositions of partnership interests. Overview of the taxation of S corporations. Prerequisite: Law 6300. Law 6302 is recommended. (Examination).

LAW 6306. Wealth Transfer Taxation. 2-3 Credits.

Survey of substantive provisions of wealth transfer taxation reflecting the changing climate of federal taxation in the area of estate, gift, and income taxation, including transfers to trusts; individual, joint, and entity ownership of property; the consequences of powers of appointment or retained interest in gifted property; inter-spousal and intrafamily transfers; and the application of credits and deductions to the tax picture. Prerequisite or concurrent registration: Law 6300. (Drafting assignments).

LAW 6307. Pension Law and Taxation. 2 Credits.**LAW 6308. Real Estate & Income Taxation. 2 Credits.****LAW 6310. Natural Resources Taxation. 2 Credits.****LAW 6312. International Taxation I. 2,3 Credits.**

Federal income tax law and policy regarding foreign persons with business and investment activities in the United States ("inbound foreign investment"). Topics include jurisdiction to tax, status as foreign or U.S. taxpayer, source of income and deduction apportionment rules, withholding taxes, tax treaties and anti-treaty-shopping rules, disposition of U.S. real property by foreign taxpayers, branch profits tax, and an introduction to foreign tax credit issues. This course may also cover foreign tax credit issues, anti-income deferral rules, tax havens, and special foreign earned income rules. Prerequisite: Law 6300 or permission of the instructor. (Examination).

LAW 6313. International Taxation II. 2 Credits.**LAW 6314. Nonprofit Org: Law & Taxation. 2 Credits.****LAW 6316. State and Local Taxation. 2-3 Credits.**

Taxation by state and local governments with particular emphasis on constitutional limitations, political and economic influences on policy, and the effects of globalization and technology. Legal and policy issues of sales and use, corporate income, property, and excise taxes. (Take-home examination or research paper with permission of the instructor).

LAW 6318. Tax Policy Seminar. 2 Credits.

Intensive study of selected aspects of the tax structure with primary attention given to the federal income tax. Problem areas are reviewed primarily from the standpoint of tax policy, including legal, economic, social, and practical considerations. Alternative solutions, including current legislative proposals, are examined. Enrollment is limited. Prerequisite: Law 6300. Recommended: Law 6302. (Research paper).

LAW 6330. Modern Real Estate Transaction. 2-3 Credits.

Basic course in conveyancing. Current problems in purchase and sale of residential real estate; legal and equitable rights, responsibilities, liabilities, and remedies of buyer, seller, broker, escrow agent, conveyancing attorney, title examiner, abstractor, and lender; interim and permanent mortgage finance, discounts, points, "subject-to" and "assumptions," remedies on default, including foreclosure processes; process of examination and assurance of title and other interests in realty, including recording and title insurance systems; settlements and closings, warranties of title, encumbrances on title, and clearing of title; emerging problems related to cooperatives, condominiums, and property owners associations. (Examination).

LAW 6332. Land Use Law. 2 Credits.

Problems, solutions, emerging concepts, and constitutionality of land use regulations, including zoning, subdivisions, historic preservation, exactions, vested rights, transfer of development rights, growth management, and urban and regional planning. (Writing assignments and take-home examination).

LAW 6334. Law of Real Estate Financing. 2 Credits.

Types of lenders, choice of entity, construction loans, permanent financing; lenders' obligations, remedies, and liabilities; title insurance, survey, and liens; ground lease and commercial lease/leasehold mortgage; joint ventures; alternate capital formation; opinion letters. (Examination).

LAW 6336. Land Development Law. 4 Credits.**LAW 6338. Housing Law and Policy. 2 Credits.**

Federal, state, and local laws that in effect constitute housing policy in the United States. Judicial interpretation of such laws. The roles the various levels of government play in the housing industry. Political and policy implications of various housing programs and how they affect communities across the country. (Research paper and writing assignments).

LAW 6339. Housing & Commun Develop Law. 2 Credits.**LAW 6340. Property & Real Estate Seminar. 2 Credits.**

Selected topics in property and real estate law to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6342. Trusts and Estates. 3,4 Credits.

Noncommercial transfers of wealth at death or during life; essential elements and formalities for creation of trusts and execution of wills, revocation and alteration, grounds for contest, limits on property owner's power to control, intestate succession. Credit may not be earned for both Law 6342 and 6343. (Examination and problem assignments or drafting projects).

LAW 6343. Trusts, Estates & Prof. Resp.. 4 Credits.**LAW 6346. Estate Planning. 2,3 Credits.**

Effective acquisition, management, and disposition of wealth by lifetime transactions and testamentary transfer. Emphasis on federal income, estate, gift, and generationskipping transfer taxation. Problem assignments address probate avoidance, interspousal transfers, jointly owned assets, transfers to minors, irrevocable trusts, closely held family and business interests, post-mortem estate planning, retirement planning, and charitable giving. Enrollment is limited. Prerequisite: Law 6342. (Drafting assignments) (Skills).

LAW 6348. Family Law. 3-4 Credits.

Survey of family law, including statutory law of domestic relations and constitutional restraint on state regulation of the family. Topics include marriage, divorce (including child custody, property division, alimony, and child support), domestic violence, reproductive rights, and family privacy. The course draws on historical and interdisciplinary materials and involves discussion of public policy issues as well as current law. (Examination).

LAW 6349. Child, Family, State. 2,3 Credits.

The allocation of power and responsibility among parent, child, and state. Freedoms under the First Amendment, education, health care including procreation, child abuse and neglect, custody, adoption, and juvenile delinquency. Sociological/psychological perspectives on the parent-child relationship. Enrollment is limited. (Take-home examination).

LAW 6350. Domestic Violence Law. 2,3 Credits.

Historical perspective on legal and public policy approaches to domestic violence; contemporary civil and criminal justice systems approaches to domestic violence; and analysis of relevant federal and state laws. (Research paper).

LAW 6351. Reading Group. 1 Credit.**LAW 6352. Family Law Seminar. 2 Credits.**

Historical and contemporary problems in the theory and practice of family law. Specific topics to be announced. Enrollment is limited. Prerequisite: Law 6348 or 6349. (Examination or research paper with permission of the instructor).

LAW 6353. Elder Law. 2-3 Credits.

Topics may include Medicare and Medicaid, financing health care, and related policy issues; health care decision making, including informed consent and advance health care directives; issues related to the right to die, including euthanasia and doctor-assisted suicide; long-term health care issues, including nursing homes and other alternatives, insurance, monitoring, and quality of services; guardianships and other procedures in the event of age-related disabilities; Social Security and Supplemental Security Income; housing issues, including tax incentives, retirement communities, and continuing care facilities. (Examination).

LAW 6354. Products Liability. 2,3 Credits.

Theory and practice of product liability litigation. Compensatory and punitive damages; competing strategies pursued by plaintiffs and defendants. Affirmative defenses and defense strategies. Failure-to-warn and defective design cases. Discovery techniques. Settlement strategy and mediation of product liability cases. Class actions and multidistrict litigation involving defective products. Differences between U.S. product liability litigation and other countries' systems. (Examination or research paper with permission of the instructor).

LAW 6358. Advanced Torts Seminar. 2 Credits.**LAW 6360. Criminal Procedure. 3,4 Credits.**

Comprehensive presentation of major issues in criminal process, with emphasis on Supreme Court cases interpreting the Constitution. The course proceeds through the criminal justice system, from first police contact, search interrogation, and other investigation, through the prosecution, preliminary proceedings, and trial. Problems of federalism, the exclusionary rule, and sentencing. (Examination).

LAW 6362. Adjudicatory Criminal Procedure. 2,3 Credits.

Constitutional and statutory regulation of the criminal adjudication process. How the Constitution and the Federal Rules of Criminal Procedure govern various stages of the criminal process. Bail and detention pending trial; the prosecutor's decision to charge; grand jury procedures; right to a speedy trial, to a jury trial, other trial rights; discovery; plea bargaining; double jeopardy; sentencing; appeals; and collateral remedies. (Examination).

LAW 6363. Role of the Federal Prosecutor. 2 Credits.

Exploration of the responsibilities and powers of the federal prosecutor. The effect of legal, ethical, policy, and practical considerations on the prosecutor's decision making throughout various stages of the criminal justice system. The potentially competing interests of federal, state, and foreign jurisdictions in investigation and prosecution of criminal activity. Classes are held at the Department of Justice. Enrollment is limited and includes students from other area law schools. (Take-home examination).

LAW 6364. White Collar Crime. 2,3 Credits.

Definition, investigation, prosecution, defense, and punishment of federal white collar crime and the characteristics and issues that distinguish white collar crime from other kinds of criminal activity. Examination of the primary federal white collar offenses, including mail and wire fraud, conspiracy, bribery, perjury, obstruction of justice, money laundering, and RICO. Federal grand jury investigations, corporate criminal liability, plea bargaining and immunity, and sentencing under the federal sentencing guidelines. (Examination).

LAW 6365. Criminal Tax Litigation. 2-4 Credits.

Legal, evidentiary, and procedural challenges presented in the prosecution of criminal tax cases. U.S. Code Title 26, Bank Secrecy Act of 1986, Title III of the USA PATRIOT Act, and selected provisions of the Sarbanes-Oxley Corporate Fraud and Accountability Act of 2002. Practices and procedures of the Internal Revenue Service and the Tax Division of the Department of Justice; the protections of the Fourth and Fifth Amendments; grand jury investigations, motions practice; terrorism financing cases; trials and parallel proceedings; and Federal Sentencing Guidelines. (Examination).

LAW 6366. Law and Criminology. 2 Credits.**LAW 6368. Law of Criminal Corrections. 2 Credits.****LAW 6369. Computer Crimes. 0-3 Credits.**

The legal issues that judges, legislators, and prosecutors confront in response to computer-related crime. How computer crimes challenge traditional approaches to the prohibition, investigation, and prosecution of criminal activity. Topics include computer hacking, computer viruses, Internet gambling, encryption, online undercover operations, the Fourth Amendment in cyberspace, the law of Internet surveillance, laws governing access to e-mail, and federal-state relations and international cooperation in the enforcement of computer crime laws. (Examination).

LAW 6370. Forensic Science. 2 Credits.

Designed to acquaint the student with the operations of a modern crime laboratory and the courtroom acceptability of testimony of forensic scientists and other evidence on laboratory test results. Identification of individuals (fingerprints, palmprints, footprints, voiceprints, anthropological reconstruction, hair identification, and serology), identification of objects (ballistics, handwriting, typewriting, fiber identification, paints, varnishes, glass, wood, and paper), toxicology, pathology, forensic use of the microscope and the camera, the coroner and the medical examiner systems, and drug law enforcement. Crime laboratory guest lecturers. (Examination or research paper with permission of the instructor).

LAW 6372. Drugs and the Law. 2 Credits.

A study of federal and state laws controlling illicit drugs, including the historical evolution of these laws, current offenses and penalties, constitutional limits on the criminal sanction, enforcement practices, and sentencing considerations. Alternative models for controlling drugs, including decriminalization and legalization will also be studied. Several class sessions will be devoted to mock criminal trials at which student conduct direct and cross-examination of guest expert witnesses in the field. Students are graded on the basis of their involvement as advocates in the mock hearings or on the basis of research papers submitted to the instructor on a topic involving drugs and the law. (Skills) or (Research paper).

LAW 6374. Federal Sentencing Seminar. 2 Credits.

Federal sentencing law and policy, with an emphasis on recent Supreme Court decisions. Purposes of punishment, guideline and non-guideline sentencing, judicial and prosecutorial discretion, plea bargaining, constitutional limitations, business crime, white collar versus violent crime, and alternative sanctions. (Research paper).

LAW 6376. Prisoners Project. 1-3 Credits.

Open to second- and third-year students. A clinical project concerned with the legal status of older prisoners (over 55 years of age). The project works for the release of high-cost, low-risk prisoners into stable environments. Students work on either individual cases or research. Case workers interview prisoners to evaluate and prepare cases for pardon, parole, or possible habeas appeals. Research projects will cover subjects ranging from overcrowding to health care to risk assessment. Some legislative work is also possible. Students may enroll concurrently in this course and Law 6633 only with permission of both instructors. This course is graded on a CR/NC basis. (Skills).

LAW 6379. Criminal Law/Procedure Seminar. 2 Credits.

Selected topics in criminal law and procedure to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6380. Constitutional Law II. 3,4 Credits.

Individual rights and liberties in the U.S. constitutional scheme and the different judicial methods of reconciling majoritarian governance with individual freedom. Privileges and immunities of national citizenship, due process of law, equal protection guarantees, freedom of expression and of religion, rights of privacy and association. (Examination or take-home examination at the instructor's discretion).

LAW 6382. The First Amendment. 3 Credits.

The rights of expression, association, and religious freedom recognized by the First Amendment to the U.S. Constitution. Categories of unprotected expression (e.g., obscenity) and less-protected expression (e.g., commercial speech). Issues of time/place/manner regulation, speech in public for a, regulation of political campaigns. Constitutional burdens and benefits unique to religion. Material includes Supreme Court decisions and secondary literature on these subjects. (Examination).

LAW 6384. Law of Separation of Powers. 3 Credits.

An examination of the law that governs the interrelations of the three branches of the federal government. Topics include the constitutional history of our governmental structure, the immunities of members of Congress and of executive officers, impeachment, congressional power over federal jurisdiction, executive orders and the limits of presidential "lawmaking," presidential and legislative vetoes, executive privilege, executive and congressional oversight of policy through supervision of the bureaucracy, controls on spending including impoundment, limits on presidential discretion to enforce the laws (e.g., special prosecutors), Congress's and the president's roles in foreign affairs (executive agreements, claims settlements, treaty powers), and congressional and presidential war powers. Emphasis will be placed on the role of the lawyer as government adviser, a role performed by many attorneys at all levels of government. (Examination).

LAW 6387. Voting Rights Law. 2 Credits.

Cases and materials on the right to vote in the United States. Major decisions on apportionment, political participation, and race as an issue in representation. Emphasis on the Voting Rights Act of 1965, including minority vote dilution litigation under Section 2, federal review of voting procedures under Section 5, and recent constitutional challenges to voting rights remedies. Other topics include partisan gerrymandering, the initiative and referendum processes, alternative election systems, the changing law of redistricting, the impact of shifts in census policy, and the litigation over the 2000 presidential election. (Examination or take-home examination at the instructor's discretion).

LAW 6388. Civil Rights Legislation. 3 Credits.

Examination of federal legislation protecting individual rights and liberties as well as the administrative and judicial implementation of that legislation. Remedial provisions for the enforcement of federal constitutional and statutory rights (e.g., 42 U.S.C. §§1983, 1985) and federal statutes prohibiting discrimination in housing, contractual relations, voting, education, and federally funded programs. Prerequisite: Law 6380 or 6878. (Examination or take-home examination).

LAW 6389. Higher Education Law. 2 Credits.**LAW 6390. Employment Discrimination Law. 2,3 Credits.**

Federal laws and executive orders relating to various types of discrimination in employment, including Title VII of the Civil Rights Act of 1964, the Civil Rights Act of 1991, the Equal Pay Act, the Age Discrimination in Employment Act, the Rehabilitation Act, the Americans with Disabilities Act, the Civil Rights Act of 1866, the Fourteenth Amendment, the National Labor Relations Act, and Executive Orders 11,246 and 11,375 relating to government contractors; substantive rights, exemptions, and burdens of proof under the various laws and regulations. (Examination).

LAW 6391. Asian Americans & the Law. 2 Credits.**LAW 6392. Gender Discrimination & Law. 2 Credits.**

An examination of the treatment of women in all areas of the law and legal remedies for sex discrimination. Emphasis on constitutional law, family law, and discrimination in employment. Enrollment limited to 30 students. (Examination or research paper).

LAW 6393. Law and Religion. 3 Credits.

Primary focus on the Religion Clauses of the First Amendment. Individual and institutional claims of religious liberty, including the constitutional status of legislative or judicial accommodations, exemptions for religiously motivated conduct, and the definition of particular acts and institutions as "religious." Government funding of religious institutions and activities, including current controversies about aid to faith-based social welfare providers, indirect funding of religious education, and extraterritorial funding of religious institutions (such as moderate Islamic schools). Government expression or endorsement of religious messages, including religious exercises and instruction in public schools, public displays of religious images, and private religious speech on public property. (Examination or take-home examination).

LAW 6394. Sexuality and the Law. 2,3 Credits.

Examination of the relationship between sexuality and the law, focusing primarily on the treatment of lesbians, gay men, bisexuals, and transgendered persons in the areas of constitutional law, criminal law, and employment law. Topics include how the legal system regulates and affects lesbian, gay, bisexual, and transgender relationships and sexual behaviors; open expressions of lesbian, gay, bisexual, and transgender identity; workplace effects; and issues in public school settings, such as Title IX discrimination, sexual harassment, and free speech. (Examination).

LAW 6395. Constitutional Law/Supreme Crt. 2 Credits.

Analysis of selected cases currently pending before the Supreme Court. Students read briefs and related materials (such as lower court decisions and controlling cases) in cases scheduled for oral argument, discuss the cases in class, vote on how they would decide the cases, and then draft opinions for class circulation and review. Each student will be required to draft two lengthy majority opinions, a concurrence, and a dissent. The course will also focus on how the Supreme Court works both as an institutional and practical matter. (Writing assignments).

LAW 6397. Federal Indian Law. 2 Credits.

Basic legal principles that govern the relationship between American Indian tribes, the federal government, and the state governments. Focus on jurisdictional disputes between those governments, the source and scope of Indian sovereignty, and recognition and enforcement of Indian land and treaty rights. (Take-home examination or research paper with permission of the instructor).

LAW 6398. The Law of Democracy. 3 Credits.

Consideration of the law that governs electoral processes. Topics include constitutional and statutory protection of voting rights, the legal status of political parties, the relationship between race and representation, judicial control of legislative apportionment and elections, and regulation of campaign finance. Credit may not be earned for both Law 6398 and either Law 6387 or Law 6419. (Examination).

LAW 6399. Constitutional Law Seminar. 2 Credits.

Selected topics in constitutional law to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6400. Administrative Law. 3 Credits.

Study of the administrative processes of government in executive and independent agencies. The federal Administrative Procedure Act is emphasized, with particular attention to adjudication, rulemaking, judicial review, investigatory powers, and enforcement. Study may include comparative state administrative law. Constitutional topics include separation of powers and due process. (Examination).

LAW 6402. Antitrust Law. 3 Credits.

Federal antitrust law and policy under the Sherman, Clayton, and FTC Acts; basic economic theory of free-market operation; the Rule of Reason and per se offenses; price fixing, market division, and boycotts; trade association activities; monopolization and attempts to monopolize; mergers and joint ventures; resale price maintenance and other vertical restraints; exclusive dealing and tie-in agreements; selected exemptions from antitrust liability. (Examination).

LAW 6403. Advanced Antitrust Law Seminar. 2 Credits.

Procedural and substantive overview of merger enforcement and analysis. Enforcement by federal authorities in the United States and merger procedures and standards in other jurisdictions, including the European Union. Appropriate welfare standard for merger analysis; the role of various types of evidence in examining mergers, including econometric and customer evidences; biases inherent in the institutional design of federal merger review; remedies; the effect of overlapping merger reviews by antitrust and industry-specific regulatory agencies; and comparisons of the U.S. merger review system with those used elsewhere. Prerequisite: Law 6402 or permission of the instructor. (Research paper).

LAW 6404. Regulatory Theory and Policy. 2 Credits.**LAW 6406. Regulated Industries. 2,3 Credits.****LAW 6408. Food and Drug Law. 2 Credits.**

Regulation of foods, drugs, and medical devices under the federal Food, Drug, and Cosmetic Act. Historical development of the law and how it is interpreted and enforced by the Food and Drug Administration and the courts. Statutory interpretation, administrative law, judicial enforcement, and the underlying roles of politics and science. (Examination).

LAW 6410. Health Care Law. 4 Credits.

Survey of the history, structure, and operation of the health care delivery system and related legal and policy issues. Emphasis on public and private health care financing, antitrust, fraud and abuse, managed care, tort liability of medical professionals and institutions, tort reform, and definition and regulation of the quality of health care. Concepts and terms of health care delivery, particularly the design, finance, and administration of current and proposed arrangements. (Take-home examination).

LAW 6411. Health Care Law Seminar. 2 Credits.

Intensive study of the health care industry, focusing on one or more of the following topics: liability arising out of managed care, ERISA preemption of state health laws, and various federal antitrust statutes as they pertain to health care. (Research paper).

LAW 6412. Communications Law. 2,3 Credits.

Study of the text, historical origin, and theoretical foundation of the Press Clause and of the role played by the mass media in modern society. Examination of the common law and constitutional protection accorded mass media publishing in areas such as libel law, the law of privacy, and liability for physical, emotional, or economic harm. The legal status of newsgathering, including journalist's privilege and access to information possessed by government. Problems of reconciling freedom of the press with guarantee of a fair trial. Government regulation of commercial speech, including advertising and promotion. Prior or concurrent enrollment in Law 6380 is recommended. (Examination).

LAW 6413. Federal Comm. Law Journal. 1,2 Credit.

Limited to third-year members of the student staff of the Federal Communications Law Journal. Second-year students must have enrolled in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive credit for this course.

LAW 6414. Developmnt in Telecomm Law. 2 Credits.

Legal and regulatory treatment of communications services and service providers, including telephone companies, cable operators, broadcast stations, wireless carriers, satellite providers, and new IP-based and next-generation networks. Regulatory challenges created by the delivery of content and services over multiple platforms employing different technologies. Rules, policies, and processes of the Federal Communications Commission and the statutory and judicial constraints on the FCC's authority to regulate existing and developing business models. (Take-home examination).

LAW 6416. Legislation. 2,3 Credits.

Legislative process and the construction and legal effect of statutes. Topics that may be considered include representational structures, lobbying, judicial review, direct democracy, legislative fact-finding and drafting, and the preparation and significance of legislative history. This course is a prerequisite to several advanced public law courses. (Examination).

LAW 6418. Legislative Analysis/Drafting. 2 Credits.

Instruction in the basic skills necessary for translating the specifications of the policymaker into legislation. Topics include determining policy objectives and an appropriate legislative scheme for their achievement; an overview of the legislative process; typical provisions in legislation; organizational issues in drafting; and the structural component of legislation. Enrollment is limited. (Take-home examination and drafting assignments) (Skills).

LAW 6419. Campaign Finance Law. 2-3 Credits.

The history, structure, application, and constitutionality of campaign finance laws. Topics include disclosure, regulation of corporations and unions, contribution limits, the role of issue advocacy in election campaigns, political party activities, public funding of campaigns, the role of the FEC, criminal enforcement of finance laws, and campaign finance reform. Focus on the Federal Election Campaign Act of 1971 and the Bipartisan Campaign Reform Act of 2002. (Take-home examination or research paper with permission of the instructor).

LAW 6420. Congressional Investigative Seminar. 2 Credits.

Congressional powers to conduct oversight and investigations of the executive branch. Topics include the scope of Congressional inquiries and investigations; subpoena, grant-of-immunity, hearing, and rule-making powers; the use of select committees, the Government Accounting Office, and other special investigative techniques; pre-hearing depositions; the rights and preparations of witnesses; the role of the press; and the interaction between Congress and prosecutorial functions, including investigations conducted pursuant to the Independent Counsel Statute. (Writing assignments).

LAW 6421. Lawyers, Lobbying, and the Law. 2 Credits.

The role of the lawyer in business-government relations. Topics include an overview of government policymaking processes; how lawyers participate in influencing government decisions; the various types of lobbying (grassroots, direct, etc.); ethics and lobbying; lobbying regulatory agencies; and attorney-media relations. (Examination).

LAW 6422. Local Government Law. 2 Credits.

Survey of the legal authority of city, county, and special-district local government units. Topics include the relationship of municipal governments with state and federal agencies; recent U.S. Supreme Court decisions affecting local governments; organizational structure and internal decision-making processes in metropolitan and other municipal-level governments; procedures for changing the form and function of local governments (e.g., annexation); local legislative and administrative authority and processes (e.g., municipal police powers); municipal finance; responsibility in tort and insurance issues; community and regional land use planning; and joint power agreements and intergovernmental compacts. (Research paper).

LAW 6423. Veterans Law. 2 Credits.

Because of its isolation from judicial review for more than 20 years, the uniquely proclaimant veterans benefits system has procedures with no direct analogies to other legal areas and has different approaches to familiar legal issues. The history and politics of veterans benefits. The system's ideals and the burden of processing more than one million claims per year. (Take-home examination).

LAW 6424. Animal Law Seminar. 2 Credits.

Survey of the treatment of animals in state, federal, and international law. Topics include the historical status of animals; federal statutes such as the Animal Welfare Act, the Endangered Species Act, and the Marine Mammal Protection Act; international conventions, free trade, and comparative animal protection laws; state laws concerning animal cruelty, hunting, animal fighting, and performing animals; free speech, religion, and other constitutional issues; litigation in state and federal courts; citizen initiatives and referenda; and the movement to obtain legal recognition of the rights of animals. (Research paper).

LAW 6426. Public Law Seminar. 2,3 Credits.

Selected topics in public law to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6430. Environmental Law. 2,3 Credits.

Philosophical foundations, common law roots, and constitutional framework of U.S. environmental law. Major statutes dealing with endangered species, clean air, clean water, environmental impact assessment, and hazardous waste cleanup. Statutory objectives and regulatory strategies of these efforts and their relative effectiveness. Decision making in the face of scientific uncertainty, the role of cost-benefit analysis, and the relative distribution of environmental burdens and pursuit of environmental justice. Alternatives to conventional regulatory approaches. Not for credit toward an LL.M. in environmental law. (Examination or take-home examination).

LAW 6431. Wildlife and Ecosystems Law. 2-3 Credits.

In-depth study of the complex body of laws that protect or regulate wildlife, including laws that protect ecosystems and the habitats in which wild animals live. The course addresses more than two dozen wildlife-specific federal laws and their accompanying regulations, similarly intricate state law schemes, federal and state civil and criminal enforcement, constitutional and tribal issues that arise in wildlife cases, and a vivid common law history that stretches across several centuries. (Examination).

LAW 6432. Air Pollution Control. 2,3 Credits.

An in-depth analysis of the Clean Air Act. Topics include the history of air pollution control, air quality planning, standard setting, technology-based controls, incineration, indoor air pollution, permitting, and control of electrical utilities. (Examination or takehome examination).

LAW 6433. Environmental Law Enforcement. 2,3 Credits.**LAW 6434. Water Pollution Control. 2 Credits.**

Introduction to water pollution control and the Clean Water Act, with emphasis on water quality requirements and policies affecting industrial, municipal, and agricultural/ development interests. Related federal laws and policies involving wetlands, watersheds, coastal pollution, oil spills, groundwater, and safe drinking water. (Examination).

LAW 6435. Trade&SustainableDevelpmnt Law. 2 Credits.

Overview of the major environmental treaties and other legal and institutional frameworks at the intersection of international trade issues and sustainable development efforts. Examination of the frequently conflicting views of judicial and quasi-judicial bodies, policymakers, and issue advocates. Emphasis on developing the theoretical bases and practical skills to address issues of trade and sustainable development that arise in governmental, private sector, and NGO practice, and effective legal strategies for addressing those issues on behalf of a wide range of clients. (Research paper).

LAW 6436. Water Resources Law. 2 Credits.**LAW 6437. Coastal, Navigatn, Wetlands Resr. 2 Credits.**

Federal statutory and constitutional law governing the development, regulation, and protection of the waters of the United States, including wetlands. Focus on federal and state regulation and protection of wetlands and other aquatic resources, with special emphasis on Clean Water Act Section 404. Other topics include the evolution of federal authority over the navigable waters of the United States; legal issues involved in the planning, construction, and operation of federal water resource development projects by federal and state agencies (i.e., for navigation, flood control, hydropower, water supply, etc.); the federal navigation servitude; the Coastal Zone Management Act; the Marine Protection, Research, and Sanctuaries Act (i.e., the "Ocean Dumping Act"); the London Dumping Convention; and Fifth Amendment "regulatory takings." (Examination).

LAW 6438. Energy Law and Regulation. 2-3 Credits.

Survey of the law and regulation of energy production, distribution, and use. Topics include fuel production, electricity and natural gas utility regulation, nuclear and hydroelectric facility regulation, renewable energy, energy efficiency, and energy tax policy and financial incentives. Legislation and regulations developed in response to climate change concerns. (Examination, take-home examination, or writing assignments and class participation) (Fall and spring).

LAW 6439. Environmental Issues/EnergyLaw. 2 Credits.

Legal and policy issues at the intersection of energy and environmental law. Petroleum consumption, energy efficiency, clean air, renewable energy, nuclear energy, facility siting, and project finance. (Class presentation and research paper).

LAW 6440. Natural Resources Law. 2-3 Credits.

Introduction to federal public lands (BLM lands, national forests, national parks, and national wildlife refuges) and the legal issues related to their multiple resource uses— forestry, mining, water, recreation, wildlife, endangered species, and wilderness. Principles of federal and state authority over these lands. Administrative law and practice governing land-management agency decision making and litigation challenging such decisions. Focus on topical case studies, statutory materials, and case law. (Take-home examination).

LAW 6441. Regulation and Mgt-Ecosystems. 2 Credits.**LAW 6442. Control-Solid/Hazardous Waste. 2,3 Credits.**

Principal federal statutes governing the management and cleanup of hazardous substances and waste. Site and remedy selection processes, liability regime, and government and private enforcement rights under the Superfund statute. Rules for identifying industrial and commercial waste as hazardous; treatment, storage, and disposal standards; regulation of recycling; and operation of underground storage tanks. (Take-home examination).

LAW 6443. Oil and Gas Law. 2 Credits.**LAW 6444. Regulatn/ToxicSubstancesRisk. 2-3 Credits.**

Government regulation of the production and use of toxic substances and the management of hazardous waste. The basic analytical processes of risk assessment and risk management; common law approaches to reducing risks from management of toxic substances; and precautionary legislation. Emphasis on federal legislation, including the Toxic Substances Control Act; the Federal Insecticide, Fungicide, and Rodenticide Act; the Safe Drinking Water Act; provisions of the Federal Food, Drug, and Cosmetic Act; the Resource Conservation and Recovery Act; and selected aspects of the Comprehensive Environmental Response, Compensation, and Liability Act. (Take-home examination).

LAW 6446. Nuclear Energy Law. 2 Credits.**LAW 6448. Occupational Health/Safety Leg. 2 Credits.**

LAW 6449. Environmental & Toxic Torts. 2 Credits.

The use of common law and statutory remedies to compensate those experiencing personal injuries or economic harm caused by exposure to toxic products or toxins in the environment. Topics covered include novel and emerging theories of recovery (e.g., medical monitoring), class actions/mass torts, preemption, and methods of proving scientific causation. (Research paper or take-home examination).

LAW 6450. Federal Facilities Environ Law. 2 Credits.

Analysis of the legal framework governing environmental law compliance at federal facilities. Review of a wide range of environmental, fiscal, and other laws that uniquely regulate federal installations and operations. Topics include the National Environmental Policy Act, statutes governing management and conservation of federal property, expenditure of federal funds, public involvement in federal environmental decision making, federal-state sovereignty issues, federal agency litigation, and professional responsibility issues. Prerequisite or concurrent enrollment: Law 6432, 6434, and 6442. (Problem assignments).

LAW 6452. Environmental Issues-Bus Trans. 2,3 Credits.

Focus on applied environmental law. Emphasis on environmental compliance counseling, identifying environmental issues in business and real estate transactions, and drafting techniques to avoid environmental problems. Topics include environmental audits, securities disclosure issues, green advertising, criminal liability for officers, environmental liability for purchase of stock and corporate assets, lender liability, and partnership liability. Prerequisite: any environmental law course. (Take-home examination).

LAW 6454. International Environmentl Law. 2-3 Credits.

The treaty negotiation process, role of international institutions in developing and implementing environmental agreements, relationship between environmental law and international issues, developing countries' perspectives on environmental issues, and social and cultural changes that affect the implementation of environmental law. Issues covered include climate change, export of hazardous waste, deforestation and biodiversity, Antarctica, and environmental concerns in war, human rights, and development financing. (Examination).

LAW 6455. Int'l Climate Change Law. 2-3 Credits.

Analysis of the legal regimes created by the United Nations Framework Convention on Climate Change (UNFCCC) and by the Kyoto Protocol. Carbon finance and trading mechanisms created by Kyoto and national and regional schemes to assist parties to the treaty in meeting their obligations. Forest carbon sequestration schemes, structure and legal aspects of carbon finance transactions, and the drafting of carbon agreements. Proposals for federal legislation and emerging state and voluntary carbon credit schemes in the United States. Potential conflicts with WTO law and proposals for a successor regime to Kyoto post-2012. (Take-home examination).

LAW 6456. Environmental Planning. 2 Credits.**LAW 6457. Sustainable Communities Law and Policy Seminar. 2 Credits.**

Focus on the emerging field of smart growth—regional development that takes into account economic, environmental, and social considerations. Factors influencing sprawl; urban trends in the U.S. and abroad; and new legal and interdisciplinary approaches to promote comprehensive planning, urban redevelopment, and regional competitiveness. (Research paper) (Fall).

LAW 6458. Enviro Negot & Dispute Resol. 2 Credits.

Negotiation and alternative dispute resolution theories and processes, focusing on complex environmental disputes and transactions involving multiple parties and scientific or technical issues. Students participate in negotiation and mediation exercises both in and outside of class, using diagnostic and other tools useful for pre-negotiation preparation, mid-negotiation analysis, and post-negotiation evaluation of proposed agreements or deadlock. Prerequisite: completion of at least 6 credits of environmental law courses or permission of the instructor. Credit may not be earned for both Law 6458 and 6648. (Simulation and short papers)(Skills).

LAW 6459. Atomic Energy Law. 2 Credits.

The evolution of the Atomic Energy Act, the regulatory structure for non-military nuclear materials, federal and state law related to nuclear waste; waste transportation; the contrasting stories of two deep geologic permanent waste repositories (Waste Isolation Pilot Plant [WIPP] and Yucca Mountain); the dilemma posed by nuclear wastes having no disposal pathway; the law and policies to avert nuclear terrorism; and compensation when the unexpected happens. (Class presentation and research paper).

LAW 6460. Envir&Energy Policy Practicum. 2 Credits.

Students conduct in-depth law and policy development work on behalf of environmental or energy nonprofit organizations or government agencies, working closely with the client organization or agency to research one, or perhaps two substantial policy issues during the semester. The research is expected to lead to rule comments, a white paper, policy recommendations, draft legislation, revised organization procedures, or other similar policy outcomes. Students regularly meet with faculty supervisors to discuss project developments. Corequisite: Law 6469. Students are evaluated with a letter grade based on the written work product for the client organization or agency. Enrollment is limited. (Skills).

LAW 6462. Law,Science,Technology Seminar. 2 Credits.**LAW 6463. Intl Environmental Compliance. 2 Credits.**

LAW 6464. Environmental Crimes. 2 Credits.

Focus on crimes under various federal environmental statutes, including the interplay of statutory and regulatory provisions that define such crimes, development of investigations and prosecutions, the rationale for criminal sanctions for certain environmental violations, and salient policies and issues associated with environmental crimes. Prior experience with environmental law from either an academic or practical perspective is recommended. (Examination).

LAW 6465. Environmental Crimes Project. 1,2 Credit.

Focus on litigation and legislative projects relating to environmental crime. Students work on federal or state legislation to enhance both the existing environmental criminal laws and the resources available for their enforcement. Students also work with the instructor on developing environmental criminal cases around the country. Prerequisite: Law 6430. The instructor's approval is required for enrollment. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. This course is graded on a CR/NC basis. (Writing and project assignments) (Skills).

LAW 6466. Environmental Law Seminar. 2 Credits.

Selected topics in environmental law to be announced at the time of registration. May be repeated for credit provided the topic differs. Enrollment is limited. (Research paper).

LAW 6467. Environmental Legislation Proj. 1-4 Credits.

Open to second-, third-, and fourth-year students with permission of the instructor. Legislative research and drafting projects related to environmental issues. Students work under supervision of the instructor in conjunction with federal and state legislators and committees to draft specific bills or background papers for congressional committees or state bodies. Enrollment is limited. The grade of H, P, LP, or NC is given for this course. Prerequisite or concurrent registration: Law 6430. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6468. Graduate Environmental Placemnt. 1-4 Credits.

The student works on a project in the environmental law field under the supervision of both the faculty director of the program and a lawyer practicing environmental law. The project may involve working with a government agency, a congressional committee, a private practitioner, or a nonprofit public-interest environmental organization. Admission to the course is limited to LL.M. students with permission of the environmental law program director. Students may earn no more than a total of 4 credit hours for this course. This course is graded on a CR/NC basis. Five hours of work per week are required for each credit.

LAW 6469. Environmental Lawyering. 1,2 Credit.

The role of the lawyer in representing government agencies and nonprofit organizations in the fields of environmental and energy law, with specific emphasis on public policy formation and interactions with regulated entities and the public. Environmental regulation, advanced environmental legal research, ethical concerns related to the practice of public interest law, client counseling and negotiations skills, the art of commenting on regulations and legislative drafting, the role of state and local governments in environmental protection, and the basics of environmental transactions. This course is corequisite for students enrolled in Law 6668 who have an environmental placement, as determined by the assistant dean for field placement; it is also corequisite for students enrolled in 6460. (Writing assignments).

LAW 6470. Intellectual Property. 3 Credits.

Survey of the different legal mechanisms for protecting intellectual property, including patent, trademark, copyright, and related state-law doctrines. This course is intended for students who desire a general exposure to intellectual property law but who do not plan to specialize in the field; taking this course as a foundation for more specific intellectual property courses is not recommended. Credit may not be earned for both Law 6470 and 6472 if 6472 is taken with Schechter. Not for credit toward an LL.M. in intellectual property law. (Examination).

LAW 6471. Patent Law. 2,3 Credits.

An overview of patent law designed for students without a patent background, including those without a technical background. Analysis of the goals and costs of the patent law system. Topics include patentability requirements, infringement, remedies, patent prosecution issues, and patent transactions. (Examination).

LAW 6472. Copyright Law. 2,3 Credits.

Historical background and general survey; how copyright is secured and maintained; subject matter of copyright; scope of protection; duration, renewal, and termination of transfers; jurisdiction and remedies; contracts and combinations, including compulsory licenses and performing rights societies; other doctrines neighboring on copyright; international aspects of copyright, including the Berne convention and other treaties on copyright and related subjects. Credit may not be earned for both Law 6472 and 6470 if 6472 is taken with Schechter. (Examination).

LAW 6473. International Copyright Law. 1-2 Credits.

Survey of the international law of copyright, including the application of key international law principles such as territoriality, national treatment and reciprocity, jurisdiction, and choice of law in copyright case law. International instruments for the protection of copyright and related rights; special problems such as P2P file sharing and technological protection measures; multilateral and bilateral enforcement issues; and unilateral approaches to combating piracy. Credit may not be earned for both Law 6473 and 6491. (Examination).

LAW 6474. Trademark & Unfair Compet Law. 2-3 Credits.

Consideration of how trademark rights are acquired at common law and under the Lanham Act; permissible and impermissible types of marks and the problem of "genericness"; protection of trade dress; trademark infringement and dilution; permissible uses of other firms' marks; trademark licensing and remedies; the right of publicity; and competitor and consumer remedies for false advertising under the Lanham Act and state statutes. When offered for 3 credits the course also addresses interference with contractual relationships and prospective economic advantage; the misappropriation doctrine; theft of business ideas and trade secrets; and prohibitions against unfair and deceptive practices under the Federal Trade Commission Act. (Examination or take-home examination).

LAW 6475. Entertainment Law. 2 Credits.

Overview of legal problems in film, theater, television, music, and publishing industries. Topics include the role of agents and managers, contractual provisions in different entertainment industries, protection for ideas and stories, right of publicity, and advanced copyright issues. Prerequisite: Law 6472 or permission of the instructor. (Examination and negotiation and drafting exercises).

LAW 6476. Patent Strategies and Practice. 2 Credits.

Patent practice and issues, with emphasis on strategic considerations. Focus on claim craftsmanship and consequences. Prerequisite: Law 6471 or permission of the instructor. (Examination).

LAW 6477. The Federal Circuit. 1-2 Credits.

The unique role of the U.S. Court of Appeals for the Federal Circuit as the only national court of appeals organized on the basis of subject matter rather than geography. Topics include the creation of the Federal Circuit and an overview of its varied jurisdictions (e.g., government contracts, constitutional takings, and international trade). Emphasis on the contributions of the Federal Circuit to patent law, and in particular its administration of eligibility, bars, "nonobviousness," equivalents, and other modern patent law problems. Comparative study of the patent jurisprudence of the Federal Circuit and other nations' courts. (Examination).

LAW 6478. Licensing-Intell Property Rght. 2 Credits.

Legal and business issues in the licensing of patents and other forms of intellectual property. Drafting of license agreements and the relationship between licensing of intellectual property and competition laws, including comparative regulations in Europe and Asia. License agreements involving governments and universities; tax and bankruptcy considerations; and multimedia licensing. (Examination and drafting exercises) (Skills).

LAW 6479. Intellectual Asset Management. 2 Credits.

Theoretical and practical aspects of managing such assets as intellectual property, technologies, knowledge, and human capital within business, economic, financial, and legal contexts. Intellectual assets recognized under domestic and international intellectual property and business laws; the limits of protection; claims for relief; the extent of damages that may be recovered; and identification, optimization, and strategic deployment of such assets within enterprises of varying sizes and in a variety of industries. Prerequisite: Law 6470, 6471, 6472, or 6474 or permission of the instructors. (Take-home examination).

LAW 6480. Chemical/Biotech Patent Law. 2 Credits.

Public policy and practice considerations relating to patenting biotechnology and chemical inventions with in-depth treatment of unique practice areas. Open to LL.M. students; J.D. students may enroll only with permission of the instructor. (Examination).

LAW 6481. Design Law. 2 Credits.**LAW 6482. Patent Enforcement. 1,2 Credit.**

Patent litigation for those who may wish to specialize in general litigation with occasional handling of patent cases, as well as for those interested in a patent solicitation career. Focuses on a rounded understanding of policy and practice considerations in the enforcement of patents. (Examination or take-home examination at the instructor's discretion) (Fall, spring, and summer).

LAW 6483. Patent Appellate Practice. 2 Credits.

Comprehensive study of the Court of Appeals for the Federal Circuit and its jurisdiction over patent cases from the perspective of an appellate practitioner. Litigation strategies and the process of guiding a client through an appeal. (Examination).

LAW 6484. Computer Law. 2 Credits.

Intellectual property rights in computer software and in cyberspace. Public policy issues relating to software and computer-related inventions and works; patent vs. copyright vs. sui generis protection debate. Patent or copyright background and some knowledge of computer technology is helpful. In even-numbered years focus is on copyright; in odd-numbered years focus is on patents. Open to LL.M. students; J.D. students may enroll only with permission of the instructor. (Research paper).

LAW 6485. Law in Cyberspace. 2-3 Credits.

Survey of theoretical and practical aspects of legal issues concerning cyberspace, including First Amendment free speech rights, commerce, computer crime, privacy, political participation, and jurisdiction. Computer background is not a prerequisite. (Examination).

LAW 6486. Information Privacy Law. 3 Credits.

Information privacy law, including the development of constitutional, tort, contract, property, and statutory law to address emerging threats to privacy. Privacy and the media, privacy and law enforcement, workplace privacy, privacy and online transactions, medical and genetic privacy, and privacy and personal records and information. (Examination).

LAW 6488. Art CulturalHeritage & the Law. 2 Credits.

Legal and policy implications at the intersection of art and the law, including intellectual property, First Amendment, and international law issues. Legal relationships between artists, dealers, auction houses, collectors, and museums. The international framework for the trade and protection of cultural property and heritage. Prior course work in intellectual property law and international law is recommended. (Research paper).

LAW 6489. Enforcement of IP Rights/ITC. 2 Credits.

In-depth examination of the U.S. International Trade Commission (ITC). The full scope of the ITC's unique jurisdiction, with primary focus on its role with respect to the adjudication and enforcement of intellectual property rights. The enactment of Section 337 of the Tariff Act of 1930 and important amendments that enable the ITC's authority over unfair trade practices relating to intellectual property matters, including patents, copyrights, trademarks, trade dress, gray market, and trade secrets. Organization of the ITC, including its commissioners, administrative law judges, and the Office of Unfair Import Investigations. All aspects of litigation, from the institution of an investigation under Section 337 to post-hearing phases. The unique requirements in Section 337 cases of importation, domestic industry, and injury. The scope of available remedies in Section 337 cases, the role of U.S. Customs in enforcing ITC exclusion orders, and review of ITC decisions and the Federal Circuit's jurisprudence relating to ITC matters. (Examination).

LAW 6490. Intrntl/Comparative Patent Law. 2 Credits.

A study of patent reform issues including domestic patent reform legislation and ongoing harmonization treaty discussions under WIPO; review of selected topics with comparative study from viewpoint of Japan, the United States, and Europe. (Research paper).

LAW 6491. Int'l Intellectual Property. 3 Credits.

Examination of international protection of intellectual property, surveying various international agreements and treaties for copyrights, patents, trademarks, and trade secrets, with focus on the agreement on Trade Related Aspects of Intellectual Property (TRIPs) of the World Trade Organization. Consideration of the basic concept of territoriality, national treatment, minimum standards, and political and policy concerns related to efforts to secure and strengthen protection of intellectual property internationally. Credit may not be earned for both Law 6491 and Law 6473. (Examination).

LAW 6492. Advanced Trademark Law. 2 Credits.

In-depth analysis of developing issues in trademark and unfair competition law, including legal, economic, and moral rationales for protection of trademarks, trade dress, domain names, celebrity persona, and related intellectual property rights; the nebulous concept of trademark dilution; tensions among trademark protection on the one hand and parody, fair use, and free speech on the other; the trademark functionality doctrine; regulation of comparative, misleading, and deceptive advertising; trademark and advertising surveys; the international dispute resolution system for challenges to domain name registrations; use and abuse of trademarks on the Internet; and trademarks in international trade, including the extraterritorial effect of U.S. trademark law, protection of well-known marks not used in the United States, restrictions on parallel imports, and use of geographic trademarks and indications. In-class practical exercises include challenging domain names using the Uniform Domain Name Dispute Resolution Policy, reviewing a mock website for a new consumer product; and seeking provisional relief based on consumer perception surveys in a trade dress litigation. (Take-home examination or research paper with permission of the instructor).

LAW 6493. Internet Law. 0-2 Credits.

Focus on speech on the Internet, including governmental attempts to control or filter speech, intermediary liability for third-party speech, digital rights management and other copyright issues, and domain names as speech. The rules and institutions that permit or disallow governance of these issues. GW degree candidates may not receive credit for both Law 6493 and 6485. (Examination).

LAW 6494. Intellectual Property Antitrust. 2 Credits.

Domestic and international concerns relating to antitrust and fair trade, with emphasis on U.S., European, and Japanese models. Consideration of basic intellectual property principles in patents, trademarks, and copyrights necessary for application of antitrust principles. Advanced understanding of antitrust law is a prerequisite unless waived by the instructor. Enrollment is limited. Prerequisite: Law 6402 or permission of the instructor. (Research paper).

LAW 6496. Intellectual Property Law Sem. 0-2 Credits.

Selected topics in intellectual property law to be announced at the time of registration. Open to LL.M. students; J.D. students may enroll only with permission of the instructor. (Research paper).

LAW 6498. Intell Property Issues Shrt Sm. 1 Credit.

LAW 6500. Government Contracts. 3 Credits.

Survey of the basic principles of government procurement, including the powers and limitations on government instrumentalities entering into contracts, the respective roles of the three branches of government in the process, the processes of contract formation and administration, the resolution of disputes arising out of both processes, and the various forums available for dispute resolution. Although the focus of this course is primarily on federal government procurement, there will be some consideration of state and local government contracting and may be some coverage of procurement by other nations or inter-national organizations. This course covers some of the material covered in Law 6502 and 6503, but at an introductory level. Not open to students in the LL.M. program in government procurement law. (Examination and problem assignments).

LAW 6502. Formation-Government Contracts. 3-4 Credits.

Survey of the law pertaining to government procurement, including an analysis of the unique features of government contracting and a discussion of the functions of Congress, the executive branch, and the courts in the procurement process. The course focuses on the contract formation process, including techniques for awarding contracts and litigation and protests involving awards. (Examination and problem assignments).

LAW 6503. Performance-Government Contract. 3-4 Credits.

Discussion of the substantive problems that most frequently arise during the performance of government contracts. Interpretation of specifications and the most generally used contract clauses; analysis of the rights of the parties when performance in accordance with the terms of the contract is not obtained. Analysis of the methods that can be used by the parties to a government contract to obtain legal relief, including detailed coverage of the disputes procedure, actions for breach of contract, and forms of equitable and extraordinary relief. (Examination and problem assignments).

LAW 6505. Government Contracts Advocacy. 2-3 Credits.

Categories of federal government contract litigation, including bid protests, contract claims, qui tam suits, and administrative suspension and debarment proceedings. Substantive and procedural problems and emerging legal and policy issues involving the Government Accountability Office, the U.S. Court of Federal Claims, and the agency boards of contracts appeals. Students draft pleadings and briefs and participate in simulations, including depositions and settlement negotiations. Enrollment is limited. (Writing assignments) (Skills).

LAW 6506. Govt Contracts Cost & Pricing. 2 Credits.

Legal aspects of government contract accounting principles and allowability of costs. Cost accounting standards and cost allocation issues. Negotiation of cost, profit, and price. Disclosure of cost accounting data. (Problem assignments).

LAW 6507. Gov Procurement, Contract, Env Law. 2 Credits.**LAW 6508. Comparative Public Procurement. 2-3 Credits.**

Comparative study of laws, regulations, and procedures dealing with public procurement. Differences between national and international procurement practices, and common principles that span many procurement systems across the world. Contract formation, performance, and dispute resolution processes. The influence of international organizations such as the European Union, United Nations Commission on International Trade Law, World Trade Organization, financing institutions, and professional organizations. Prerequisite or concurrent registration: Law 6500, 6502, 6503, or permission of instructor. (Research paper).

LAW 6509. Government Contracts Seminar. 2 Credits.

Selected topics in government procurement law to be announced at the time of registration. (Research paper).

LAW 6510. Graduate Gov Contracts Placemt. 1-4 Credits.

Students work on a project in the government contracts field under the supervision of the faculty directors of the program and a lawyer practicing government contract law. The project may involve working with a government agency, a congressional committee, a private practitioner, or a nonprofit public-interest organization. Admission to the course is limited to LL.M. students and requires approval of one of the faculty directors of the program. This course is graded on a CR/NC basis. Five hours of work per week are required for each credit.

LAW 6512. Gov. Procurement-Intel. Property. 2 Credits.

Intellectual property law in terms of its challenges to federal government procurement rules. Competing policy demands for innovation, transparency, and sound public investment in the intersection of intellectual property law and federal procurement rules. (Problem assignments) International Law.

LAW 6520. International Law. 3,4 Credits.

Introductory survey of the legal system governing relations among states and its expansion to non-state actors, such as international organizations, natural and juridical individuals, indigenous groups, and proto-states. Analysis of the sources of international law, including the formation of customary norms and techniques of treaty interpretation; the application and enforcement of international law in domestic courts, international tribunals, organizations, and diplomacy; doctrines of jurisdiction and immunities; the impact of emerging states and new technologies on doctrine; the use of force; human rights; constitutional aspects of international law; and recurring political and jurisprudential issues. (Examination).

LAW 6521. Int'l Money Laundering. 3 Credits.

Interrelationships among money laundering, corruption, and terrorism, their threat to global peace and prosperity, and the convergence of international law efforts to confront them. Because the detection of concealed assets is essential to deterring these crimes, students will learn the fundamentals of financial investigation and "mutual legal assistance" between countries through a five-week computerized gaming exercise. (Paper and examination or take-home examination at the instructor's discretion).

LAW 6522. Internatl Business Transaction. 3 Credits.

U.S. law and practice relating to characteristic forms of international trans-actions, including the transnational sale of goods (the law governing the documentary sale, various forms of letters of credit, commercial terms and insurance); the export of technology through franchising, distributorship, and licensing contracts; and the export of capital through the establishment, operation, and withdrawal of foreign direct investment. The impact of relevant international organizations and/or emerging substantive international commercial law (e.g., the United Nations Convention on Contracts for the International Sale of Goods). Specialized problems in the negotiation and structure of international transactions. (Examination).

LAW 6523. Int'l Competition Law Regime. 2 Credits.

Anti-monopoly laws and their national and international enforcement. Competition policy and key national, bilateral, and multinational elements of the emerging international competition regime. Recommended: Law 6402. (Research paper).

LAW 6524. International Commerce Law. 2 Credits.

The study of international transactions for the purchase, sale, payment for, and financing of goods, as governed by the U.N. Convention on Contracts for the International Sale of Goods and other multilateral treaties on international lease financing, factoring, commercial paper, and fund transfers. The substantive provisions of these treaties, the process by which they are developed, and the various interpretive approaches available under different legal regimes will be considered. (Examination or research paper with permission of the instructor).

LAW 6526. International Trade Law. 2,3 Credits.

Study of domestic and international laws and institutions governing foreign trade. Legal aspects of U.S. participation in the World Trade Organization, NAFTA, and other international forums; laws regulating customs and tariffs, most-favored nation treatment, subsidies, dumping, unfair trade practices, and disruptive imports under the escape clause. Specialized problems in regulating exports under the Export Administration Act, boycotts, corrupt practices, and restrictive business practices may be covered. (Examination).

LAW 6527. Adv International Trade Law. 2-3 Credits.

In-depth study of the World Trade Organization rules and its dispute settlement system. Each year the course examines some of the most recent developments in trade law, with a close reading of recent WTO adjudicatory decisions on issues such as subsidies, regulation of goods, regulation of services, sanitary restrictions, product standards, investment measures, and intellectual property. Issues of U.S. trade law and the relationship of international trade law to other fields of international law may also be addressed. Prerequisite: Law 6526 or permission of the instructor. (Take-home examination or research paper with permission of the instructor).

LAW 6528. International Civil Litigation. 2-3 Credits.

Analysis of the law relevant to the trial of cases having international elements in U.S. domestic courts, including the problems of establishing jurisdiction over foreign defendants, obtaining transnational discovery and service of process, enforcing foreign judgments, drafting and defending choice of forum and choice of law clauses, determining the extraterritorial reach of U.S. law, proving foreign law, and assessing the role of U.S. courts in deciding cases with potential consequences for U.S. foreign relations. The impact of international issues on actual litigation as well as the initial structuring of a transaction in light of the client's potential litigation interests. Prerequisite or concurrent registration: Law 6520; for post-J.D. students, permission of instructor may be substituted. (Examination).

LAW 6530. International Organizations. 2,3 Credits.

Analysis of characteristic legal issues arising out of the creation and operation of organizations of nation states. Included are issues of legal personality, treaty making and norm creation, law making, privileges and immunities, membership, dispute settlement, and withdrawal. Emphasis on the United Nations and its activities, including those relating to peace, security, and human rights. Exemplary problems in organizations such as the International Labour Organization, the World Health Organization, and the World Trade Organization. (Examination).

LAW 6532. Comparative Law. 2,3 Credits.

Study of legal systems in the civil law tradition (France, Germany, Italy, Spain, Latin America, Japan). Comparison with the common law system. Consideration of the history and sources of the civil law, the major public and private law institutions in civil law countries, civil and criminal procedure, the role of civil law lawyers (and of international lawyers working with them), and selected substantive legal issues. Several sessions are devoted to Islamic law as an example of a sophisticated non-European system. (Examination).

LAW 6533. International Family Law. 2-3 Credits.

Comparative study of domestic and international laws and institutions affecting family law. The role of the state and religion in family decision making, marriage, divorce, child custody, property distribution, alimony, adoption, and inheritance rights. Treaties affecting substantive rights and international recognition of domestic decisions. Recommended: Law 6520 or 6532. (Examination or research paper with permission of the instructor).

LAW 6534. Law of the European Union. 2-4 Credits.

Study of the legal nature and structure of the European Union. Topics include the roles of the Court and the other institutions, the question of sovereignty, the "four freedoms," competition, company law and labor relations, agriculture, and the EU in international law. (Examination).

LAW 6535. Islamic Law. 2 Credits.

Overview of the origins of Islamic law and development of schools of Islamic jurisprudence. Foundations of Islamic constitutional law, separations of powers, civil rights, the law of obligations, formation and dissolution of contracts, remedies, business contracts, banking law, and family law including marriage, divorce, child custody, and the law of property and inheritance. Crimes and punishments. Islamic law as it pertains to international issues. (Take-home examination or research paper with permission of instructor).

LAW 6536. Law of Japan. 2,3 Credits.

Introduction to the Japanese legal system and comparative analysis of U.S. and Japanese law. Constitutional law, separation of powers (including political institutions and the judicial system), corporate law, equality law, religious freedom, administrative law, civil and criminal procedure, and the legal profession. (Examination or research paper with permission of the instructor).

LAW 6537. Traditional Jewish Civil Law. 2 Credits.**LAW 6538. Immigration Law I. 2-3 Credits.**

Theory and application of the Immigration and Nationality Act and 8 Code of Federal Regulations. Examination of practice before the Executive Office for Immigration Review, Citizenship and Immigration Services, Immigration and Customs Enforcement, Customs and Border Protection, Department of State, and Department of Labor. Removal, political asylum, adjustment of status, naturalization, and other issues. Enrollment is limited. (Examination).

LAW 6539. Immigration Law II. 2 Credits.

Family- and employment-based immigration practice. Regulations, case law, and procedural aspects concerning employment-based, nonimmigrant visa admission into the United States and lawful permanent resident status in the United States through employment and/or family preferences categories. Prior enrollment in an immigration law course is not required. (Take-home examination).

LAW 6540. Refugee and Asylum Law. 2 Credits.

Selected topics from the areas of international law pertaining to the protection of refugees and domestic law of political asylum. Enrollment is limited. (Take-home examination).

LAW 6541. International Finance. 3 Credits.**LAW 6542. Int'l Banking&Investment Law. 2 Credits.**

Study of the legal aspects of international banking and finance, including international laws and regulations concerning the structure and transactions of international banks and institutions. Topics include the institutional, legal, and regulatory frame work for international commercial banking and development finance; the emerging rules regarding international trade in financial services; international supervision of banking activities and regulation of banking transactions; contractual instruments for international financial transactions; and international debt and development crisis. Credit may not be earned for both Law 6542 and 6541. (Examination).

LAW 6543. Law of the People's Repub/Chin. 2-3 Credits.

Introduction to the basic institutions and processes of the legal system of the People's Republic of China. Focus on the contemporary system and its role in political, economic, and social developments. (Take-home examination).

LAW 6544. Foreign Direct Investment. 2 Credits.

An examination of the legal, business, and financial problems involved in investing across national borders. Focuses on the strategies and techniques for structuring such investments and on the framework of regulation that affects them. The analysis includes U.S. regulation of foreign investors, different types of foreign regulation of U.S. investments, and international controls on domestic regulation of foreign investment through treaties and conventions. Model international transactions and sample documents are used to illustrate basic issues. (Examination).

LAW 6545. International Project Finance. 2 Credits.

The use of contracts to shift and mitigate risks inherent in the acquisition, construction, and development of capital-intensive infrastructure projects (e.g., power generation, oil and gas production and distribution, industrial processes, telecommunications networks). Structural and risk allocation issues. Project finance in an international context with a focus on emerging markets. Prior enrollment in Law 6280 is recommended. (Examination).

LAW 6546. International Law-Human Rights. 3,4 Credits.

An overview of international and regional human rights instruments and institutions, focusing on the manner in which the United Nations, Inter-American, European, and African human rights systems seek to protect individual and group rights. Examination of the problems these systems have encountered in discharging their mandate and exploration of ways to strengthen international and regional governmental and nongovernmental efforts in the human rights field. Prerequisite or concurrent registration: Law 6520; for post-J.D. students, permission of instructor may be substituted. (Examination).

LAW 6547. RegionalProtection/HumanRights. 3 Credits.

Advantages and disadvantages of addressing human rights issues regionally rather than at the national or global levels. The jurisprudence and procedures of the European, Inter-American, and African human rights systems. The potential for developing a regional system in parts of Asia. Prerequisite: Law 6520. (Research paper).

LAW 6548. Air and Space Law. 2 Credits.

International law related to the use of outer space. Analysis of space treaties in force, the role of intergovernmental and nongovernmental international organizations, and space laws and regulations of various nations. The relationship of space law to air law. Issues of liability resulting from space activities, military use of space, pollution and contamination of outer space, and earth observations and remote sensing. Enrollment is limited. Prerequisite: Law 6520 or permission of the instructor. (Research paper).

LAW 6549. Chinese Business Law. 2 Credits.

Introduction to the regulatory regime governing business activity in China. Issues of concern to foreign traders and investors. Specific regulations and their implementation in practice. (Take-home examination).

LAW 6550. Law of the Sea. 2 Credits.

International law related to the use of ocean space. Development of international law concerning internal waters, territorial sea, contiguous zone, high seas, continental shelf, fisheries, exclusive economic zone, maritime boundaries, marine environment, marine scientific research, deep seabed, and settlement of disputes. Current legal and policy issues associated with these areas. Prerequisite or concurrent registration: Law 6520; for post-J.D. students, permission of instructor may be substituted. (Examination).

LAW 6551. Intl Law/Territory&TerritDispu. 2,3 Credits.**LAW 6552. Law of War. 2 Credits.**

Human rights law in international and internal armed conflict, examining the origins of the law of war, the 1949 Geneva Conventions for the Protection of War Victims, the Geneva Protocols of 1977, the 1980 Geneva Conventional Weapons Convention, other treaties and customary international law relating to means and methods of warfare, the role of the International Committee of the Red Cross, war crimes and enforcement mechanisms, and current problems in the regulation of hostilities. Prerequisite: Law 6520. (Research paper).

LAW 6553. Export Ctrl Law & Reg. 2 Credits.

Study of U.S. laws and regulations that govern the export of defense products and dual-use civilian technologies. Examination of international export control treaties and case studies. Students participate in team exercises involving export transactions. (Take-home examination).

LAW 6554. International Criminal Law. 2 Credits.

Prosecution of international crimes and application of national criminal law across international boundaries. The use of criminal sanctions to serve the objectives of the international community, particularly with respect to peace, national security, and human rights. Prior enrollment in Law 6520 is recommended. (Examination).

LAW 6555. Comparative Constitutional Law. 2-3 Credits.

Comparative study of U.S. and non-U.S. legal systems. Structural issues including federalism and separation of powers; individual rights issues including affirmative action, abortion, and freedom of speech. (Take-home examination).

LAW 6556. International Arbitration. 2 Credits.

Survey of arbitration and related mechanisms of dispute resolution in the international legal system that arise out of commercial, financial, and governmental transactions. Analysis of the arbitration agreement, the process of arbitration, and the enforcement of arbitral awards as well as the common principles governing the disposition of claims. Review of the various arbitral tribunals and their rules. Prerequisite or concurrent registration: Law 6520 or 6522; for post-J.D. students, permission of instructor may be substituted. (Examination or take-home examination at the instructor's discretion).

LAW 6557. Intro. to Trans. Islamic Law. 1-2 Credits.

Examination of the principles of Islamic finance, Shari'a investment criteria, and the means to structure Shari'a-compliant transactions and products. Focus on Islamic law as applied to cross-border transactions, regardless of the nature and identity of the players. Case studies analyze underlying investment principles and agreements and the legal environment in which they operate, including the role of Islamic banking and finance in addressing global challenges in such sectors as the development of renewable energy, infrastructure, and technology transfer. (Take-home examination).

LAW 6558. International Negotiations. 2 Credits.

International negotiations from a practitioner's perspective, with a focus on private sector negotiations. The roles and interests of each of the parties to a negotiation (including private actors, lending institutions, governments and government agencies, and multinational nonprofit organizations); political and other domestic issues affecting international negotiations; practical exercises in negotiations; and multilateral negotiations. Prerequisite or concurrent registration: Law 6520 or 6522; for post-J.D. students, permission of instructor may be substituted. (Research paper).

LAW 6559. Nation Building & Rule of Law. 2 Credits.

Legal norms and techniques used to help stabilize and rebuild societies emerging from violent conflict. Clarifying and reforming laws, reconstructing and staffing judicial and law enforcement institutions, and establishing mechanisms to deal with past atrocities. Prior enrollment in Law 6520 or 6532 is recommended. (Research paper).

LAW 6562. Public International Law Sem. 2 Credits.

Selected topics in the theory and practice of international law to be announced at the time of registration. Enrollment is limited. May be repeated for credit if topic differs. Prerequisite: Law 6520 or permission of instructor. (Research paper).

LAW 6563. Trade Remedy Law. 2 Credits.

Remedies for U.S. businesses facing competition from imports, including U.S. laws concerning antidumping, countervailing duties, and safeguards. (Take-home examination).

LAW 6564. Intrntl Business Transactions. 2 Credits.

Selected topics in international business law and practice to be announced at the time of registration. Enrollment is limited. Prerequisite: Law 6522 or permission of instructor. (Research paper).

LAW 6565. Comparative Law Seminar. 2,3 Credits.

Selected topics in comparative law to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6567. Human Rights Advocacy. 2 Credits.**LAW 6568. Human Rights Lawyering. 2,3 Credits.**

Human rights lawyering from the perspective of victims' advocates and governmental and inter-governmental officials. Overview of international human rights law and key domestic legal principles. Methods of investigation and fact-finding, interpretation and application of law, and choice of remedies. Role playing and other class exercises using the United Nations and Inter-American systems as models. (Take-home examination).

LAW 6570. Int'l Human Rights of Women. 2 Credits.

Theoretical and practical challenges to reinforcing international human rights of women. Major international and regional treaties and instruments; standards to determine sex discrimination as developed by international tribunals and domestic courts; interaction of international and domestic law in the context of women's rights; and feminist/ activist theories and critiques on topics such as state responsibility for violence against women and conflicts between women's rights and religious or cultural rights. (Research paper).

LAW 6571. Human Rights&Enviro Protection. 2-3 Credits.

The intersection of national and international law on human rights and environmental protection, with focus on rights-based approaches to environmental protection and how environmental deterioration may limit or infringe the enjoyment of guaranteed rights. The current state of the law concerning a claimed right to a safe and healthy environment, corporate social responsibility, land and resource rights of indigenous peoples, the role of international financial institutions, and human rights litigation linked to environmental harm. Prerequisite: Law 6520. (Research paper).

LAW 6573. Tax-Timing of Income/Deduction. 2 Credits.**LAW 6576. Human Rights and Women. 2 Credits.****LAW 6577. Special Corporate Tax Problems. 2 Credits.****LAW 6578. Human Rights Advocacy/Dissemnt. 2 Credits.****LAW 6584. Human Rts & Mil Resp/Terrorism. 2 Credits.****LAW 6585. Fundamentals/Intl Trade Law. 1 Credit.****LAW 6588. Tax Practice/Procedure Seminar. 2 Credits.****LAW 6589. Women, Money and Law. 2-3 Credits.**

Historical, theoretical, and practical approaches to issues involving the relationship between gender and financial power with an introduction to basics of financial planning. Recommended prerequisite or corequisite: Law 6300 and either Law 6250, 6342, or 6343. (Research paper).

LAW 6590. Jurisprudence. 2,3 Credits.

Basic jurisprudential concepts; nature of law; development of legal institutions; jurisprudential schools—natural law, analytical, historical, sociological, functional; law and logic; law and justice; the judicial process; legislative, executive, administrative decision making; impact of politics, economics, and scientific advance on legal systems; contemporary trends in jurisprudential thought. (Take-home examination).

LAW 6591. Survey of US Legal History. 2-3 Credits.

Examination of the history of U.S. law from the seventeenth century to the present. Topics include Anglo-American constitutionalism, the reception and transformation of the common law, slavery and the law, race and gender in U.S. law, corporations, labor and the rise of the regulatory state, and legal education and the legal profession in U.S. history. (Research paper).

LAW 6592. Jurisprudence Seminar. 2,3 Credits.

Selected topics in legal theory to be announced at the time of registration. Enrollment is limited. (Research paper or examination).

LAW 6593. Introduction to Legal Theory. 1 Credit.

Introduction to different schools of legal thought and theory, including but not limited to Lockean, Hegelian, utilitarian, economic, feminist, critical legal, public choice, and sociobiological theory. Principles and policies that motivate changes in legal doctrine and how concepts of morality, personal autonomy, collective action, tripartite government, equity, and efficiency affect the legal process. The objective is to offer law students a foundation to be conversant in different concepts that relate to their legal training, particularly in the first-year curriculum. Enrollment is restricted to first-year J.D. students assigned to this course. (Examination).

LAW 6594. History of the US Constitution. 2,3 Credits.

Examination of the philosophical and historical background of the U.S. Constitution, including the writings of Locke and Montesquieu, with particular attention to social contract theory, natural law, and separation of powers principles. Consideration of the relevance of these concepts to the debates surrounding the drafting and ratification of the Constitution and the original Bill of Rights, and the degree to which these concepts have been reflected in decisions of the Supreme Court, including selected decisions of the Marshall Court and several more recent decisions. (Take-home examination or research paper with permission of the instructor).

LAW 6595. Race, Racism, & American Law. 2-3 Credits.

Examination of the influence of race and racism on the development of law in the United States. The use of law by legislatures and judges, both to enforce and to remedy racism in selected contexts, possibly including criminal justice, voting rights, public accommodations, education, employment, housing, free speech, and family law. The course will also consider the utility of critical race theory as a method of legal analysis. (Examination or take-home examination).

LAW 6596. Law of Race and Slavery. 2,3 Credits.

The role of legal norms and processes in developing patterns of slavery and race relations in the United States and other societies. Application of themes and methods from comparative and historical sociology to the study of legal history. Topics include the legal origins of slavery in the Americas, law and racial classifications, social and economic consequences of legal discrimination, and legal remedies and the undoing of systems of discrimination. Comparative study of the history of race relations in the United States, Latin America, and South Africa. Enrollment is limited. (Research paper).

LAW 6597. Legal History Seminar. 2,3 Credits.

Selected topics in legal history to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6598. Law and Economics. 2,3 Credits.

An introduction to the main features of the Law and Economics movement, with particular attention to the content, application, and criticisms of the Coase theorem. Topics include a brief review of essential aspects of price theory (including the concept of a competitive price equilibrium), an introduction to the principal notions of welfare optimality (including Pareto and Hicks-Kaldor efficiency), and the problems posed by externalities and public goods. Emphasis on some of the classical works in this field and applications to specific decisions. (Examination).

LAW 6599. Prof. Resp. & Ethics Seminar. 2 Credits.

Selected topics in professional responsibility and ethics. Intensive study of questions of lawyer responsibility and ethics raised by professional codes and moral philosophy. This course does not satisfy the professional responsibility requirement. Prerequisite: Law 6218. Enrollment is limited. (Research paper).

LAW 6600. Public Economic Policy & Law. 2 Credits.**LAW 6601. History of the Common Law. 3 Credits.**

The history of legal procedure and institutions in England and the United States, in particular the relationships among judges, juries, and lawyers in civil and criminal cases. Development of rules of evidence; links between law and equity. How changes in politics, society, and economics affect legal procedures and courts. Origins of the adversarial legal system and comparisons with the inquisitorial system on the European continent and elsewhere. (Examination or research paper with permission of the instructor).

LAW 6602. Law and Accounting. 2,3 Credits.

Study of fundamental accounting principles with emphasis on corporation accounting; legal and accounting implications of specific items in financial statements of corporations; inventory adjustments; corporate transactions, distributions, capital adjustments. No accounting background required; students who majored (or the equivalent) in accounting or who hold certifications as Certified Public Accountants (CPA) may not enroll. (Quizzes and problem assignments or examination with the permission of the instructor).

LAW 6604. Quantitative Analysis-Lawyers. 2,3 Credits.

Introductory course for lawyers that does not assume or require advanced mathematical skills. Application of non-legal methods of analysis in public policy problems with attendant evidentiary requirements, including the effective use of experts. Principal nonlegal methods of policy analysis, including micro-economic analysis (basic price theory and industrial organization), financial analysis (including the roles of financial institutions), and statistical analysis. Introduction to basic analytic concepts and terminology/ jargon, common applications of the analysis in the law, and practical problems of expert witnesses. (Examination or research paper with permission of the instructor).

LAW 6606. Law and Literature. 2-3 Credits.

The ways in which the law is depicted in literature, and how literary interpretation can be applied to legal texts. Literary and philosophical works of short to moderate length by Melville, Kafka, Shakespeare, Capote, Morrison, Garcia Marquez, and Faulkner, among others. (Research paper and oral presentations).

LAW 6607. The Law & Regulation of Science. 2 Credits.

The ways in which scientific reasoning and the scientific method have been applied, and misapplied, to legal and policy decisions. The differing standards for scientific and legal inquiry and whether these standards have proven to be compatible. Analysis of pivotal science-based legal decisions, beginning with the trial of Galileo and including evolving standards for scientific evidence in the courtroom, the difficulty of proving causation in toxic torts, regulation of hazardous substances, balancing of personal liberty and public health, determining when a drug is safe enough to market, attempts to define fundamental aspects of the human condition, the debate over evolution in public schools and the legal and ethical issues arising from mapping and patenting the human genome. The means by which scientific inquiry itself is fostered and regulated in the United States and abroad, including the recent policy debates over human cloning and embryonic stem cell research, as well as scientific misconduct, fraud, bias, and the politicization of scientific debate. Prerequisite: Law 6230. (Examination or research paper).

LAW 6608. Feminist Legal Theory. 2-3 Credits.

Law and society studied from the point of view of women. The course focuses on feminist jurisprudential treatment of gender and examines the prospects for sex equality under the law. Enrollment is limited. (Research paper).

LAW 6610. Cult Hist & the Lawyer Sem. 2 Credits.

LAW 6612. Law and Anthropology. 2 Credits.

Cultural aspects of law in the context of various societies. Traditional African dispute resolution and the changes brought about by colonialism; Native American political structures; Gypsy courts; the relative legal rights of insiders and outsiders in small-scale European communities; non-legal resolution of disputes in urban neighborhoods in the United States. Legal rules and cultural traditions of these and other societies compared in terms of economic efficiency, personal responsibility and freedom, and ethical balance. (Research paper).

LAW 6614. Law and Psychiatry. 2 Credits.

The problems and legal issues raised by the interface of psychiatry and the law: informed consent, privacy, the insanity defense, civil and criminal commitment under questions of legal competency, forced medication, and disability law with reference to the mentally ill. Evolving trends in professional standards, constitutional rights, legislative rights, ethics, licensing, contracts, and torts in the relationships among the psychiatric profession, the law, and the mentally ill. The role of psychiatric experts, standards of admissibility, and weight of evidence and their impacts on the relationship between the law and the mentally ill. (Take-home examination).

LAW 6615. Law and Psychology. 2 Credits.**LAW 6616. Genetics and the Law. 2,3 Credits.**

Examination of the legal and ethical issues that genetics research and technology present. Topics include eugenics; the Human Genome Project; ethical, legal, and regulatory issues associated with clinical genetics and various types of genetic testing; possible discriminatory uses of genetic information by employers, insurers, and others; legislative attempts to protect the privacy and confidentiality of genetic information; ownership of genetic samples and information; patent law issues; forensic uses of genetic information; gene therapy; and cloning. (Examination).

LAW 6617. Law and Medicine. 2,3 Credits.

Examination of legal and ethical issues that arise in the doctor-patient relationship and medical decision making. Topics include informed consent; human experimentation; personhood; reproduction, including advanced technologies and prevention; patients' rights; death, dying, and limits on intervention; hard choices; and public policy issues. (Examination).

LAW 6620. Consumer Mediation Clinic. 1-5 Credits.**LAW 6621. Small Bus & Comm Dev Clinic. 4-6 Credits.**

Under faculty supervision students assume substantial responsibility for advising small businesses and nonprofit organizations. Students interview and counsel clients; draft incorporation, limited liability company, and partnership documents (such as articles of incorporation, bylaws, articles of organization, operating agreements, and partnership agreements); research local licensing requirements and zoning laws; review and draft contracts and leases; and advise on basic intellectual property issues, tax problems, and related matters. Prerequisites: Law 6250 and 6300 and permission of instructor. Law 6472 and 6474 are recommended. The grade of H, P, LP, or NC is given for this course. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6622. Public Justice Advocacy Clinic. 4-6 Credits.

Under faculty supervision, students represent clients in federal and local courts before administrative agencies in public interest litigation on behalf of low-income clients. Student responsibilities include client interviewing, factual development, legal analysis, drafting of pleadings, discovery, motions, briefs, oral advocacy, and negotiating settlements in cases. Students may also work with nonprofit and community organizations to present positions before the City Council and administrative agencies. Open to second and third-year students. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6623. Neighborhood Law & Policy Clinic. 4-6 Credits.

Students represent indigent clients in a range of civil matters, including welfare, disability, and housing benefits, as well as matters pertaining to offender re-entry. Student responsibilities include interviewing, fact investigation, negotiations, and conducting hearings at administrative tribunals and in D.C. Superior Court. Students may have the opportunity to participate in policy advocacy before the D.C. Council and administrative rule-making bodies. Open to second-year and third-year students. (Skills).

LAW 6624. Family Justice Litig. Clinic. 4-6 Credits.

Under faculty supervision, students represent indigent litigants in D.C. Superior Court. Students undertake a range of cases in the Family Court (divorce, custody, child support, alimony) and the Domestic Violence Unit (civil protection orders, modification and extension of civil protection orders, and contempt). While representing domestic violence litigants, students also have an opportunity to gain experience in criminal practice by collaborating with the U.S. Attorney's Office in related prosecutions of accused batterers. Students are responsible for every phase of litigation, drafting of initial pleadings, motions, conducting discovery, settlement negotiations, and taking the case to trial. In the weekly two-hour seminar, students study the substantive and procedural law relevant to their cases, including the local domestic violence and family law statutes, criminal law, evidentiary principles, and procedural rules. The seminar also focuses on litigation skills exercises, including performing direct and cross examinations, arguing motions, and conducting negotiations. Permission of the clinic director is required prior to registration. Prerequisites: Law 6230 and 6360. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6625. Fed, Criminal, Appellate Clinic. 4-6 Credits.

Under supervision of the instructor, third-year students litigate appellate cases, primarily direct appeals from criminal convictions in area courts of appeal. Student responsibilities include development of the lawyer/client relationship, record review and selection of issues, briefing, and oral argument. A weekly seminar addresses the lawyer's role, ethical and procedural problems, litigation strategy, and criminal justice issues through role-playing, simulation, and written exercises. Enrollment is by permission of the instructor. Prerequisite: Law 6230 and 6360; Law 6650 is recommended. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6626. Vaccine Injury Clinic. 4-6 Credits.

This clinic allows second- and third-year students, under faculty supervision, to represent individuals who may have suffered serious vaccine-related injuries and who are seeking damages in trial and appellate proceedings before the U.S. Court of Federal Claims. A weekly two-hour seminar focuses on multidisciplinary (medical/legal) training in vaccine injury issues, and on lawyering skills such as client interviewing and counseling and cross examination of medical experts. Students also evaluate the Vaccine Injury Compensation Program as a model for tort reform. Students must register for this clinic for both the fall and spring semesters. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6627. Environmental Law Clinic. 2,3 Credits.

Second-, third-, and fourth-year students participate in the J.B. and Maurice C. Shapiro Environmental Law Clinic, representing clients in environmental litigation in both the federal and state systems. Students work under faculty supervision in administrative, trial, or appellate actions, particularly citizen suit actions. This work includes actions under the Clean Air Act, the Clean Water Act, the Comprehensive Environmental Response, Compensation and Liability Act, the Endangered Species Act, the Resource Recovery and Conservation Act, and the Federal Facilities Compliance Act. Permission of the instructor is required prior to registration. Two or 3 hours of graded credit are given for this course. Prerequisite or concurrent registration: Law 6430. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6628. Clinic Teaching & Scholarship I. 1-4 Credits.

Exploration of the multiple goals of clinical education, with an intensive orientation to clinical methods and a historical and philosophical overview of clinical education. Students examine, use, and evaluate clinical pedagogies designed to meet these multiple goals and submit regular journals throughout the year. Other areas of inquiry include: the role of clinical education in legal education; the role of law school clinics in social justice issues and in communities; pedagogies for teaching and supervising lawyering in a public service context; the nature of reflective learning and the value of journals as pedagogy; and types of clinical scholarship. Enrollment limited. Open to LL.M. students serving in clinical fellowships. Law 6628 is prerequisite to Law 6629. (Writing assignments).

LAW 6629. Clinic Teaching & Scholarship 2. 1-4 Credits.

Exploration of the multiple goals of clinical education, with an intensive orientation to clinical methods and a historical and philosophical overview of clinical education. Students examine, use, and evaluate clinical pedagogies designed to meet these multiple goals and submit regular journals throughout the year. Other areas of inquiry include: the role of clinical education in legal education; the role of law school clinics in social justice issues and in communities; pedagogies for teaching and supervising lawyering in a public service context; the nature of reflective learning and the value of journals as pedagogy; and types of clinical scholarship. Enrollment limited. Open to LL.M. students serving in clinical fellowships. Law 6628 is prerequisite to Law 6629. (Writing assignments).

LAW 6630. Immigration Clinic. 4-6 Credits.

Students assume substantial responsibility for handling a range of immigration law matters, including determining what benefits or forms of relief, if any, are available to their clients, and, in appropriate circumstances, representing their clients in removal proceedings. Because the Clinic's clients come from all over the world, cultural sensitivity is essential and foreign language skills are welcome. A minimum of 210 hours of work per semester and attendance at a two-hour weekly seminar are required. Permission of the instructor is required prior to registration. Prerequisite: Law 6538. Students may enroll in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6631. Health Law Rights Clinic. 4-6 Credits.

Second-year and third-year students counsel clients of the Health Insurance Counseling Project, a legal services organization that responds to more than 3,000 requests for assistance each year. Students advocate for clients who have unpaid medical bills; or who need medical care that an insurer, public or private, is unwilling to provide; or who must choose among various types of health insurance. Students learn about Medicare, Medicaid, and other health insurance law and procedures in the weekly two-hour seminar; simulation exercises hone interviewing, counseling, and advocacy skills. Students can expect to work with at least five to six clients in one semester, and should plan to devote to the course four hours per week per credit. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6632. Administrative Advocacy Clinic. 2-3 Credits.**LAW 6633. Int'l Human Rights Clinic. 4-6 Credits.**

Under faculty supervision, students work in a clinical setting in partnership with experienced attorneys and specialized institutions engaged in human rights activism on case projects drawn primarily from one of two main areas: (1) litigation and advocacy before international human rights tribunals and treaty bodies, primarily in the Inter-American and United Nations human rights systems; or (2) human rights litigation and advocacy in the United States, especially in relation to the Alien Tort Claims Act and the Torture Victims Protection Act. Prerequisite: Law 6520. Recommended courses include: 6546, 6547 and/or completion of the GW-Oxford International Human Rights Law Program. (Skills).

LAW 6634. Law Students in Court: Criminal Division. 4-6 Credits.

This is a clinical program in pre-trial and trial litigation that offers students the opportunity to develop skills as litigators while representing persons in the Superior Court of the District of Columbia. Students who participate in the criminal division represent persons charged with misdemeanor offenses, but may also handle some juvenile cases. Under the supervision of clinical instructors, students are responsible for all aspects of litigation: interviewing clients and witnesses, conducting investigations, preparing pleadings, engaging in plea bargaining, and conducting all motions hearings and trials pursuant to the Superior Court's student practice rule. Only third-year students who have completed LAW 6230 and LAW 6360 may participate in the clinic. Students must participate in the program for two consecutive semesters. Seminars are held in the evening. Students must have one day per week available for court appearances and plan to devote approximately 25 hours to the clinic each week. Students may enroll concurrently in this course and LAW 6668 only with permission of both instructors. This course is graded CR/NC for the Fall semester and with letter grades for the Spring semester. (Skills) (Fall and spring).

LAW 6635. Disabled People and the Law. 2 Credits.

Examination of those areas in which persons with disabilities have traditionally been denied some right or benefit afforded other persons in our society and have resorted to legal action; introduction to statutes and agencies designed to protect people with disabilities. Students may choose to prepare a research paper (and receive legal writing credit and a numerical grade) or to gain practical experience doing a clinical project (on a CR/NC basis). Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. (Skills).

LAW 6636. Law and the Deaf. 1-3 Credits.**LAW 6637. Legal Activism. 2,3 Credits.****LAW 6638. Intensive Clinical Placement. 1-12 Credits.**

Projects involving litigation, research, or public interest activities of a legal nature (including aid to indigents, support of public interest nonprofit corporations, and support of governmental agencies or courts) may be initiated and will be supervised by a faculty member. Projects must be approved in advance by the Law School Supervisory Committee (three members) both as to whether the project is appropriate and as to the number of credit hours to be granted. A maximum of 10 credit hours may be taken in one or two semesters. This course is open to a limited number of third-year students. This course is graded on a CR/NC basis. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors.

LAW 6639. Law Students in Court: Civil Division. 4-6 Credits.

This is a clinical program in pre-trial and trial litigation that offers students the opportunity to develop skills as litigators while representing persons in the Superior Court of the District of Columbia. Students who participate in the civil division represent tenants in landlord-tenant actions, but may also handle some consumer cases, negligence cases, and other civil matters. Under the supervision of clinical instructors, students are responsible for all aspects of litigation: interviewing clients and witnesses, conducting investigations, preparing pleadings, engaging in settlement negotiations, and conducting all motions hearings and trials pursuant to the Superior Court's student practice rule. Only third-year students who have completed Law 6230 and 6360 may participate in the clinic. This is a one-semester clinic. Seminars are held in the evening. Students must have one day per week available for court appearances and plan to devote approximately 25 hours to the clinic each week. Students may enroll concurrently in this course and Law 6668 only with permission of both instructors. Enrollment is limited. (Skills) Prerequisites: LAW 6230, LAW 6360. (Fall and spring).

LAW 6640. Trial Advocacy. 3 Credits.

Pretrial and trial techniques with emphasis on procedural, evidentiary, tactical, and ethical problems experienced by trial lawyers in actual cases. Complaint drafting, pretrial motions, depositions and other discovery methods, preparation of witnesses, jury selection, the use of experts, direct and cross-examination, introduction of documents, courtroom techniques, and opening and closing arguments. Role playing in simulated courtroom situations. Once registered, no student may drop this course without permission of the dean of students. Prerequisite: Law 6230; Saltzburg—students may be enrolled concurrently in Law 6230. Enrollment is limited. (Short papers and exercises) (Skills).

LAW 6642. ADR Competition. 1 Credit.

Participants in intrascholastic and interscholastic ADR competitions may register for this course and receive 1 credit for each competition in which they participate. A student successfully advancing from a regional to a national competition must register for this course again to receive 1 additional credit for participation in the national. All students competing must complete and submit an Intent to Compete form available in the Dean of Students Office. In no event may a student receive more than a total of 3 credits for intra- and interscholastic competitions under Law 6642, 6644, and/or 6645, nor may a student participate in more than one such competition in any given semester. Once registered, no student may drop this course without permission of the dean of students. This course is graded on a CR/NC basis.

LAW 6643. Pre-Trial Advocacy. 2-3 Credits.

Pre-trial and trial techniques of civil discovery and motions practice by role-playing in simulated cases. The class is divided into "law firms" that represent clients in cases at the pre-trial stage. Students are required to attend pre-trial conferences and conduct extensive discovery, including conduct of depositions, argument on discovery motions to compel or sanctions, preparation and service of interrogatories, requests for production, requests for admissions, and motions for physical and mental examinations. The course ends with a five-hour mock trial by jury. (Simulation and paper) (Skills).

LAW 6644. Moot Court. 1 Credit.

The Moot Court Board sponsors four upper-level, intrascholastic competitions each year: the Van Vleck Constitutional Law Moot Court Competition, the Jessup International Law Moot Court Competition, the Giles Sutherland Rich Intellectual Property Law Moot Court Competition, and the Government Contracts Moot Court Competition. Participants earn 1 credit for each competition in which they participate, regardless of how they finish. Participants in the Jessup Competition and the Giles Sutherland Rich Competition who compete in the regional rounds must register for this course again, and receive 1 credit in addition to the credit earned for participating in the inhouse competition. All students competing must complete and submit an Intent to Compete form available in the Dean of Students Office. Only current members of the Moot Court Board may petition to receive Moot Court Board funds to attend external competitions, unless approval is otherwise granted by the dean of students. In no event may a student receive more than a total of 3 credits for intra- and interscholastic competitions under Law 6642, 6644, and/or 6645, nor may a student participate in more than one such competition in any given semester. Once registered, no student may drop this course without permission of the dean of students. This course is graded on a CR/NC basis.

LAW 6645. Mock Trial Competition. 1 Credit.

The Mock Trial Board sponsors the intrascholastic Cohen & Cohen Mock Trial Competition in the fall semester. The competition offers students an opportunity to practice trial skills and serves as a basis for selection of teams to represent the Law School at various interscholastic trial competitions. The competition requires a two-person team to prepare a written trial brief and argue its case before a judge and jury. The competition also provides a seminar on trial advocacy skills, strategies, and techniques. Students who participate in the fall competition receive 1 credit. Those students attending interscholastic trial competitions must register for this course again, and receive 1 credit for each competition in which they participate. All students competing must complete and submit an Intent to Compete form available in the Dean of Students Office. In no event may a student receive more than a total of 3 credits for intra- and interscholastic competitions under Law 6642, 6644, and/or 6645, nor may a student participate in more than one such competition in any given semester. Once registered, no student may drop this course without permission of the dean of students. This course is graded on a CR/NC basis.

LAW 6646. Mediation. 2 Credits.

Consideration of the growing use of mediation to resolve disputes and comparison with other dispute resolution processes. Taking the roles of mediators and disputants, students participate in a number of simulations. Mock mediations are conducted individually and with a co-mediator. Examination of practical and ethical issues; applicability to various substantive areas including contract, tort, consumer, family, criminal, discrimination, and landlord/tenant. Students are expected to fill out role-playing evaluations of themselves and classmates on a regular basis and to prepare written assignments as directed by the instructor. Enrollment is limited. Students may take both Law 6646 and 6647 from the same instructor only with the instructor's permission. (Skills).

LAW 6647. Alternative Dispute Resolution. 2,3 Credits.

Theoretical and practical aspects of negotiating and mediating transactions and disputes. Techniques studied include neutral evaluation, regulatory negotiations, minitrials, settlement judge approaches, arbitration, and other "hybrids." Students participate in a number of simulated disputes related to various practice areas, both in and outside of class. Enrollment is limited. Students may take Law 6647 and either 6646 or 6648 from the same instructor only with the instructor's permission. (Role playing and written assignments) (Skills).

LAW 6648. Negotiations. 1-3 Credits.

Examination of the negotiation process employed by legal practitioners. The assigned text considers the negotiation process, negotiating techniques, verbal and nonverbal communication, and other factors that influence these interpersonal transactions. Students engage in negotiation exercises that enable them to practice the art of negotiating and to examine their personal strengths and weaknesses. Grades are determined in meaningful part by the results obtained, vis-a-vis other class members, from these exercises. Students are also required to prepare a short paper on a topic pertaining to the negotiation process. Enrollment is limited. Students may take both Law 6648 and 6647 from the same instructor only with the instructor's permission. Credit may not be earned for both Law 6648 and 6645. (Skills).

LAW 6650. Client Interviewing/Counseling. 2 Credits.

Practice with gathering and evaluating facts supplied by clients, followed by presentations of advice based on consideration of facts and applicable law. Discussion of interpersonal aspects of client relations and ethical problems that may arise in the context of client interviews. Students participate in simulated interviews, portraying both clients and attorneys. A paper discussing some aspect of the interviewing and counseling process is required. Enrollment is limited. (Simulation and paper) (Skills).

LAW 6652. Legal Drafting. 2,3 Credits.

Students learn the fundamental skills necessary to draft litigation and transactional documents. Practical application of the drafting process to the preparation of litigation documents, such as pleadings and motions, and transactional documents, such as contracts, deeds, wills, or other agreements. Topics include planning and structuring a document, legal research strategies, the role of procedural rules, plain language initiatives, and ethical principles that affect the drafting process. (Drafting projects and short writing exercises) (Skills).

LAW 6653. Advanced Appellate Advocacy. 2 Credits.

Intensive study of appellate process, brief writing, and argumentation. Focus on techniques for creating and structuring an appellate brief and developing effective arguments to support a client's position and refute an opposing party's position on appeal. Topics include developing a theory of the case and developing arguments based on precedent. Strategic considerations of appellate briefs and effective oral argument. (Appellate briefs and oral argument) (Skills).

LAW 6654. Law and Rhetoric. 2,3 Credits.**LAW 6655. Advanced Legal Research. 2 Credits.**

Intensive review of legal research tools and methods involving both digital and print resources. This course reviews general categories of materials, including reporters, codes, and secondary sources, and their place in contemporary law practice. Students will explore methods of conducting research in specific areas of the law. (Research exercises and paper) (Skills).

LAW 6656. Independent Legal Writing. 1,2 Credit.

Preparation of a research paper under the supervision of a member of the faculty who will determine, prior to registration, whether the work required for the topic justifies 1 or 2 credit hours. If elected for 1 credit hour, this course may be repeated for 2 credit hours to meet the legal writing requirement for the J.D. degree. Approval by the faculty supervisor is required prior to registration; if the faculty supervisor is a member of the part-time faculty, approval is also required from the senior associate dean for academic affairs or associate dean for academic affairs. Compliance with the legal writing requirement as outlined in this Bulletin is necessary if the course is used to satisfy that requirement. Students may not take more than a total of 2 credits in this course under the supervision of part-time faculty members. (Research paper).

LAW 6657. Scholarly Writing. 1-2 Credits.

Introduction to writing for scholarly legal journals. Topic selection, research strategies, organization, style, grammar, usage, and the editing process. This course reflects journal participation for second-year students on all journals. Satisfactory completion of Law 6658, 6659, 6660, 6661, 6662, 6663, 6664, or 6667 in the third year is required to receive credit for this course. The grade of H, P, LP, or NC is given for this course.

LAW 6658. Law Review. 1-4 Credits.

Limited to third-year members of the student staff of the Law Review. A maximum of 2 credit hours may be earned in this course. Second-year students must enroll in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive CR for this course.

LAW 6659. International Law Review. 1-4 Credits.

Limited to third-year members of the student staff of the International Law Review. A maximum of 2 credit hours may be earned in this course. Second-year students must enroll in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive CR for this course.

LAW 6660. Federal Circuit Bar Journal. 1-2 Credits.

Limited to third-year members of the student staff of the Federal Circuit Bar Journal. A maximum of 2 credit hours may be earned in this course. Second-year students must enroll in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive CR for this course.

LAW 6661. Public Contract Law Journal. 1-4 Credits.

Limited to third-year members of the student staff of the Public Contract Law Journal. A maximum of 2 credit hours may be earned in this course. Second-year students must enroll in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive CR for this course.

LAW 6662. Intellectual Property Law Jrnl. 1-4 Credits.

Limited to third-year members of the student staff of the American Intellectual Property Law Association Quarterly Journal. A maximum of 2 credit hours may be earned in this course. Second-year students must enroll in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive CR for this course.

LAW 6663. IntlLawInDomesticCourtsJournal. 1-4 Credits.

Limited to members of the student staff of the International Law in Domestic Courts Project. A maximum of 4 credits may be earned in this course. Second-year students must enroll concurrently in Law 6520 and 6657. This course is graded on a CR/NC basis.

LAW 6664. JournalEnergy/EnvironmentalLaw. 1-2 Credits.

Limited to third-year members of the student staff of the Journal of Energy and Environmental Law. A maximum of 2 credit hours may be earned in this course. Second-year students must enroll in Law 6657 to reflect journal participation. This course is graded on a CR/NC basis. Satisfactory completion of Law 6657 in the second year and satisfactory completion of all journal work in the third year is required to receive CR for this course.

LAW 6665. Upper-Level Writing. 1 Credit.

This course is an elective corequisite to seminar courses that require or permit a research paper or Law 6656, Independent Legal Writing, for students who intend to seek publication. Instruction on legal research strategies and structural techniques; individual and small-group feedback on interim writing assignments; and guidance on seeking publications. Credit may not be earned for both this course and Law 6657. Permission of the instructor of the course for which the research paper is to be written is required. Enrollment is limited. This course is graded on a CR/NC basis. (Writing Assignments).

LAW 6666. Research and Writing Fellow. 1-3 Credits.

Limited to students selected to assist in teaching first-year Legal Research and Writing (Law 6216) and Introduction to Advocacy (Law 6217). Two credit hours may be earned in both the fall and spring semesters. This course is graded on a CR/NC basis.

LAW 6667. Field Placement Practicum. 0 Credits.

LAW 6668. Field Placement. 0-4 Credits.

Students earn academic credit for externships with qualifying judicial, public interest, government, and nonprofit organizations. The placement must be at a qualifying judicial, government, or non-profit organization. During the fall and spring semesters, the placement must be located in the Washington, D.C. metropolitan area. Students may earn credit for internships outside of the D.C. metropolitan area, including international internships, during the summer session only. In order to enroll in the summer distance classes, students must have completed at least 28 credits toward the J.D. degree. During the fall and spring semesters, the placement must be located in the Washington, DC metropolitan area. Students may earn credit for externships outside of the DC metropolitan area, including international externships, during the summer session only. A list of pre-approved placements is available on the Law School portal and from the Field Placement Program Office. If a placement has not been previously approved, the assistant dean for field placement must approve the placement for registration to be completed. Students enrolled in this course must fulfill a classroom component requirement by enrolling concurrently in Law 6469, 6669, 6670, 6671, 6672, 6674, or in another Law School course along with Law 6673, as determined by the assistant dean. Students who have already taken a corequisite course in conjunction with a previous placement may be eligible to waive the corequisite course requirement and participate in the Advanced Field Placement Program. All waiver requests must be approved by the assistant dean for field placement. Students participating in the Advanced Field Placement Program are required to complete reflective learning exercises under the supervision of a program faculty member. Corequisite course waivers are not available to students seeking credit for their first judicial externship or for international externships, regardless of any previous corequisite course(s) taken. Students may enroll concurrently in this course and any other clinical course only with the permission of both instructors. This course is graded on a CR/NC basis and requires students to complete 60 hours of work and 5 pages of substantive legal or legislative writing per credit. Students may earn up to 4 field placement credits per semester for a total of no more than 8 credits for this course in their degree program. Students participating in the Domestic Violence Project must register for this course for 2 to 4 credits and enroll concurrently in Law 6674. Students participating in Environmental Lawyering must register for this course for 2 to 4 credits and enroll concurrently in Law 6469. Permission of the assistant dean for field placement is required prior to registration in this course and any corequisite courses. Additional information about the program, including a detailed description of program requirements, its registration process, and other policies and procedures is located in the Field Placement Student Handbook. Students are responsible for reading the handbook and complying with all program policies and procedures.

LAW 6669. The Craft of Judging. 2 Credits.

Current issues in judicial ethics, judicial administration, and the trial and appellate process. Topics include standard of review, statutory interpretation, the role of precedent, and judicial activism. This course is corequisite for students enrolled in Law 6668 in a judicial placement, as determined by the assistant dean for field placement. Students not concurrently enrolled in Law 6668 may take this course only with the permission of the instructor. Enrollment is limited. This course is graded on a letter-grade basis. (Writing assignments).

LAW 6670. Public Interest Lawyering. 2 Credits.

Examination of the role of the public interest lawyer. The lawyer's role and responsibilities in different branches of government and in public affairs, both historically and currently; ethical issues; identification of public interest clients and the potential for conflicts of interest among them; organizational settings; and the politics of public interest lawyering. This course is corequisite for students enrolled in Law 6668 in a public interest placement, as determined by the assistant dean for field placement. Students not concurrently enrolled in Law 6668 may take this course only with the permission of the instructor. Enrollment is limited. This course is graded on a letter-grade basis. (Writing assignments).

LAW 6671. Government Lawyering. 2,3 Credits.

The role of the lawyer in federal government agencies. Agency adjudication and rulemaking; judicial review; enforcement; regulatory reform; the role of the office of general counsel; alternative dispute resolution; the Freedom of Information Act; and congressional relations. This course is corequisite for students enrolled in Law 6668 in a government agency placement, as determined by the assistant dean for field placement. Students not concurrently enrolled in Law 6668 may take this course only with the permission of the assistant dean for field placement. Enrollment is limited. This course is graded on a letter-grade basis. (Research paper).

LAW 6672. The Art of Lawyering. 2 Credits.

Issues concerning the nature of the legal profession, its institutions, and its members in the international context. Topics include the diverse organizations in which law is practiced, ethical dilemmas, workplace culture, supervision, and career expectations. This course is corequisite for students enrolled in 6668, as determined by the assistant dean for field placement. Students not concurrently enrolled in Law 6668 may take this course only with the permission of the instructor. Enrollment is limited. (Writing assignments).

LAW 6673. Field Placement Tutorial. 1 Credit.

This course is corequisite to Law 6668, Field Placement, for students whose classroom component is fulfilled by a course designated by the assistant dean for field placement other than Law 6469, 6669, 6670, 6671, 6672 or 6674. Requirements of this course include writing a 10-page research paper under the supervision of the instructor of the approved course and meeting with the instructor at least twice during the semester to discuss the paper and the externship experience. This course is graded on a letter-grade basis. Registration is permissible only with the prior express approval of the assistant dean for field placement. (Writing Assignments).

LAW 6674. Domestic Violence Project. 2 Credits.

Social change lawyering in the battered women's movement. The role of lawyers in the development of the movement, and, major legal reforms of the past three decades, domestic violence lawyering skills, the challenges of work in this field, and students' professional development. This course is corequisite to Law 6668 for students enrolled in a placement consisting of trial work with a local legal service provider on domestic violence cases, policy or legislative work on domestic violence issues with a national organization, or appellate work with attorneys in law firms conducting pro bono domestic violence appeals. Students not concurrently enrolled in Law 6668 must have the instructor's permission to register for this course. (Writing assignments) (Skills) Graduate Courses in Litigation and Dispute Resolution.

LAW 6675. Advanced Trial Advocacy. 3 Credits.

Conduct of a simulated civil, criminal, or administrative trial before a jury or judge. Students learn to present persuasive opening statements and closing arguments and to conduct forceful direct and cross-examination of fact witnesses and experts. Ethical, evidentiary, procedural, and substantive aspects of litigation. Practical solutions to typical problems litigators encounter in the presentation of a case. At the conclusion of the course, students undertake the trial of a simulated case from opening statement through jury deliberation before a judge or very experienced litigator. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6676. Mediation/Alternative Dispute Res. 3 Credits.

An introduction to alternative dispute resolution, with a focus on the many ways in which ADR can be used effectively by the advocate. Issues include determining whether ADR is appropriate in a given case, the timing of an ADR process, and the type of process that should be used. The role of the advocate during a mediation or other dispute resolution process, e.g., the selection of the neutral, preparing for a mediation, and the advocate's participation in the mediation itself. Emphasis on the mediation of civil cases, with a briefer discussion of the use of ADR in the criminal justice context. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6677. Pretrial Practice-Civil/Criminal. 3 Credits.

Students are divided into simulated law firms and assigned roles that correspond to the pre-trial tasks lawyers routinely are called upon to perform in civil cases. The exercises begin with discovery, and students attend a Fed.R.Civ.P.26(f) meeting, dealing with required disclosures and other preliminary discovery matters. Students prepare discovery motions and responses, take and defend depositions, file dispositive motions, attend a pretrial conference, and prepare a joint pretrial memorandum. By the end of the course, each student will have simulated moving a case from the filing of a complaint to the eve of trial. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6678. Ethics-Adjustment/Settlement. 3 Credits.

Ethical issues that come into play once disputes have arisen and litigation has either commenced or been threatened. The ethical rules that govern threats to sue and responses to such threats, and the rules that are important once litigation has commenced. Each class focuses on a hypothetical problem involving an ethical issue or set of issues. In each hypothetical, the lawyer's duty to the client and to the court through role playing. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6679. Advanced Evidence. 3 Credits.

How the rules of evidence can be used to build and present a case more effectively. Theory and philosophy of the rules of evidence; scope of attorney-client privilege in corporate and government litigation; joint defense agreements; vicarious admissions in civil and criminal litigation; hearsay; expert evidence; character evidence rules; motions in limine; impeaching witnesses; laying foundations; exhibits and charts; and the evidentiary difference between bench and jury trials. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6680. The American Jury. 3 Credits.

Focus on a variety of issues that arise in civil and criminal jury trials in federal and state courts. Topics include separating judicial from jury functions; the jury pool; the grand jury; jury voir dire; challenges for cause and peremptory challenges; scientific jury selection: jury instructions; verdict forms; presentation of evidence; jury nullification; improving juror participation; impeaching verdicts; and high-publicity trials. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6681. Negotiation/Conflict Mgt System. 3 Credits.

Analysis of negotiation techniques, verbal and nonverbal communication, and other factors that influence interpersonal communication in a typical negotiation. Introduction to the theories, principles, and practices of organizational development and dispute systems design. Focus on strategies for designing systemic approaches to resolve a cluster or stream of disputes in particular organizations or institutions, including government agencies, educational and health care settings, corporations, and nonprofit organizations. The concept of "negotiating" with clients in order to develop effective conflict management systems. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6682. International Dispute Resolutn. 3 Credits.

Development of complex dispute cases involving multiple parties. International case law and conventions, including jurisdiction, forum selection, comity, enforcement, and application and proof of foreign law. Students work in teams to prepare motions, gather evidence, interview and depose fact and expert witnesses, interview clients, develop and present opening and closing arguments, and conduct direct and cross examination of lay and expert witnesses. Simulation exercises include adjudication of disputes through role playing and preparation and participation in a mock trial. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6683. College of Trial Advocacy. 3 Credits.

An intensive, six-day course focusing on trial simulation and role playing. A varying panel of experienced lawyers and judges discuss and demonstrate trial skills and ethics, and oversee and critique small-group simulations by students in making opening and closing statements and in conducting direct and cross-examination of experts and other witnesses. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6684. Pre-Trial Pract-Criminal Cases. 3 Credits.

Students in this course are assigned alternating roles as prosecutor and defense counsel in order to simulate the pre-trial tasks lawyers routinely perform in criminal cases. Simulation exercises begin after the arrest of the suspect, with student-prosecutors conducting a preliminary investigation and student-defense counsels interviewing the defendant. Thereafter, students conduct and attend grand jury proceeding, arraignments, bail hearings, preliminary hearings, suppression hearings, plea bargaining sessions, and plea hearings before the trial judge. Students conduct discovery and file pre-trial motions and responses. By the end of the course, each student will have simulated moving a case from arrest to the eve of trial. Enrollment is limited. Open only to LL.M. students. (Simulation).

LAW 6685. Arbitration. 3 Credits.

The arbitration process from making arbitration agreements to making and enforcing awards. Arbitration versus traditional civil litigation. Types of arbitrators and their selection. Procedural, evidentiary, and ethical rules in arbitration practice. Enrollment is limited. Open only to LL.M. students. (Writing assignments and oral exercises) Special Courses for Graduate Law Students.

LAW 6690. Thesis. 2 Credits.

Students must register for two consecutive semesters and cannot register for both courses in one semester. In addition to identifying a member of the full-time faculty to serve as thesis adviser, students are required to attend scheduled class sessions, which cover issues such as topic selection, specialized research, and the process of organizing and writing the thesis.

LAW 6691. Thesis. 2 Credits.

Students must register for two consecutive semesters and cannot register for both courses in one semester. In addition to identifying a member of the full-time faculty to serve as thesis adviser, students are required to attend scheduled class sessions, which cover issues such as topic selection, specialized research, and the process of organizing and writing the thesis.

LAW 6692. LRW for Int'l LLM Students I. 1 Credit.

Required for LL.M. students who do not hold a J.D. degree from a U.S. law school. Topics include research in primary, secondary, and specialized sources of law; legal citation; the structure of a legal memorandum; writing style; and plagiarism. Students prepare legal memoranda and perform specific research and writing assignments. The director of the International and Comparative Law Program may waive the requirement of this course for students who have taken a similar course at another U.S. law school.

LAW 6693. LLR for Int'l LLM Students II. 1 Credit.

Required for LL.M. students who do not hold a J.D. degree from a U.S. law school and who intend to sit for a bar examination in the United States. The course provides an advanced focus on legal research, writing, and analysis. Students prepare short legal writing assignments and legal memoranda.

LAW 6694. Fundamental Issues in US Law. 2 Credits.

Required for LL.M. students who do not hold a J.D. degree from a U.S. law school. The course covers fundamental topics in U.S. law (e.g., constitutional law, contracts, civil procedure, federal courts, conflicts of law, torts, corporations) and introduces students to U.S. legal methods. The director of the International and Comparative Law Program may waive the requirement of this course for students who have taken a similar course at another U.S. law school and who successfully pass a test administered by the director that demonstrates knowledge of the subject matter. (Examination).

LAW 6695. Legal Practicum. 0 Credits.

Students independently arrange paid positions with outside organizations in order to obtain in-depth practical experience. The placement should provide on-the-job practical training for career preparation or advancement. Prior approval must be obtained from the associate dean for international and comparative legal studies. No academic credit is given for this course.

LAW 6696. Graduate Indep Legal Writing. 1,2 Credit.

Students enrolled in this course must prepare a research paper under the supervision of a member of the faculty who will determine, prior to registration, whether the work required for the topic justifies 1 or 2 credit hours. The course is limited to graduate students who have had a seminar or comparable course in the field of proposed research. Students are responsible for obtaining an adviser from the full- or part-time faculty who is willing to sponsor their research. Written approval by the faculty supervisor, the graduate program director, and either the senior associate dean for academic affairs or associate dean for academic affairs is required prior to registration. Work must be completed within the semester. Students may repeat this course once for credit with the approval of the dean of students, but students may not take more than a total of 2 credits in this course under supervision of part-time faculty members. The availability or nonavailability of this course to particular students does not preclude any students from enrolling in Law 6656. (Research paper).

LAW 6697. Graduate Outside Placement. 1-4 Credits.

Limited to LL.M. candidates. Practical experience in the student's area of specialization or interest. The student may work with a government agency, congressional committee, court, or other such entity performing tasks normally assigned to an attorney. Course approval must be obtained from the student's faculty adviser and/or the dean. Students enrolled in either the Environmental Law or Government Contracts program should refer to Law 6468 and Law 6510. A maximum of 4 credit hours may be applied toward graduation. Five hours of work per week are required for each credit. This course is graded on a CR/NC basis.

LAW 6698. S.J.D. Dissertation Research. 0 Credits.

Candidates for the Doctor of Juridical Science degree must register for this course in four consecutive semesters (excluding the summer session), beginning with the semester of matriculation. No academic credit is given for this course. 6824 Examination of the protection of refugees, asylum seekers, and the internally displaced under the UN Refugee Convention and other international instruments, regional accords, and national law. Emphasis is placed on considering the various conceptions of "refugee," defining persecution, and understanding the rights of asylum and nonexpulsion. Regional developments in Europe, Southeast Asia, and Africa are covered. The predicament of populations at risk, especially women and victims of war or conflict, is discussed. The consequences for the human rights of forced migrants of humanitarian intervention, safe havens, and economic sanctions are analyzed. (Class participation and examination).

LAW 6701. THE U.N. & THE MAINTENANCE OF. 2 Credits.**LAW 6820. Hmn Rts & Intl Crimnl Process. 2 Credits.****LAW 6822. Comparatv Hmn Rts Institutions. 2 Credits.****LAW 6824. Int'l Human Rights&Refugee Law. 2 Credits.****LAW 6825. Econ/Soc/CultrlRghtsLaw & Prac. 2 Credits.**

Legal and practical challenges that arise from a state's obligation to protect economic, social, and cultural rights (ESCR), and the conceptual framework for those rights. Mechanisms and tools for implementation of ESCR, including the right to housing, health, food, water, education, and work. Obligations of states for human rights beyond their borders. (Class participation and examination).

LAW 6826. Human Rights in theMarketplace. 2 Credits.

The impact of international human rights standards on global trade, corporate governance and competition, international finance, and economic development. Basic principles and institutions; market-based initiatives toward corporate responsibility (i.e., efforts by companies to attract consumers and investors by voluntarily adopting human rights codes of conduct or social accountability standards); domestic regulation (directives and legislation in various countries that, through human rights conditionality, attempt to recruit the transnational corporation as an instrument of foreign policy); civil liability (the enforcement of standards against corporations through private lawsuits in domestic courts); and international regulation (under which intergovernmental organizations attempt to channel corporate conduct in ways that are thought to be socially responsible). (Examination).

LAW 6827. Gender,Sexuality&Int'l HR Law. 2 Credits.

Application of the international human rights framework to constructions of gender and sexuality. The politics of gender and sexual diversity within the universality of human rights, legal pluralism, and cultural relativism. Relevance of international human rights law to the global response to the HIV/AIDS epidemic. (Class participation and examination).

LAW 6828. International Rights of Women. 2 Credits.

Major treaties and international instruments (both U.N. and regional) relating to women's rights; standards of sex discrimination as developed by international tribunals and domestic courts; interaction of international and domestic law in the context of women's human rights; feminist and activist theories and critiques of state responsibility for violence against women; conflicts between women's rights and religious or cultural rights.

LAW 6830. Hmn Rts Advocacy & Disseminatn. 2,3 Credits.

This course offers students the opportunity to develop skills in human rights advocacy and dissemination. Through the use of simulation exercises, such as the preparation of petitions to regional and international human rights bodies, country condition reports in support of litigation in national courts, and applications for refugee status, students engage in critical analysis of the methods and strategies for human rights advocacy at the local, national, regional, and international levels. Emphasis is also placed on the training of officials in human rights standards and the dissemination of such information to the general public. Students who receive credit for Law 6570 may not enroll in this course. (Simulation exercises and class participation).

LAW 6832. Rts/Minor/Grps/Indigns Peoples. 2 Credits.

LAW 6834. HmmtarianLaw & Popultns atRisk. 2 Credits.

LAW 6836. Hmn Rts & Milit Rspns/Terrorism. 2 Credits.

Examination of international human rights issues that arise when governments use military force, instead of traditional civilian law enforcement methods, to respond to terrorism or the threat of terrorism. Topics include definitions of terrorism and military force; basic authority of governments to use military force against suspected terrorists; and human rights questions posed by military actions such as surveillance of civilian populations to detect terrorist activity, targeted killings and destruction of property of suspected terrorists, and the detention, interrogation, trial, and other punishment of persons accused of terrorism. Consideration of the duty of governments to use military force to provide security against terrorism and the rights of persons injured by military responses to terrorism to receive compensation. (Examination).

LAW 6838. War, Peace & Human Rights. 2 Credits.

The international legal regime applicable during times of armed conflict. Protection and promotion of international human rights law in post-conflict situations, with emphasis on the role of United Nations peacekeeping operations. (Examination).

LAW 6839. Advanced Seminar/Human Rights. 2 Credits.

LAW 6840. Cross-Brd Trade/Intelct Prop. 1 Credit.

Issues raised by international trade in goods protected by copyright, patent, or trademark law, and the response of the United States, the European Union, and other legal systems to those issues. Exploration of various doctrines that regulate the importation of goods protected by intellectual property rights, such as those forbidding parallel importation and those dealing with the first-sale doctrine and exhaustion of intellectual property rights. The economic and social policy considerations underlying these doctrines. (Examination).

LAW 6841. International Patent Law. 0-2 Credits.

Introduction to the techniques of international patent regulation and consideration of the effects and desirability of such regulation. International agreements concerning patents, including the Paris Convention, the Patent Cooperation Treaty, the European Patent Convention, and the Trade Related Aspects of Intellectual Property (TRIPs) Agreement. GW degree candidates may not receive credit for both Law 6841 and 6490. (Examination).

LAW 6843. Internet Law II. 1 Credit.

LAW 6844. Patents, Technology & Society. 1 Credit.

LAW 6845. Tech Protectn/Author's Rights. 0-2 Credits.
Technologies used to protect authors' rights (such as encryption, flags, degradation schemes, and watermarking) and the law that protects and regulates them, including the U.S. Digital Millennium Copyright Act, the European Copyright Directive, the World Intellectual Property Organization (WIPO) Copyright Treaty, and the WIPO Performance and Phonograms Treaty. Consideration of the impact of these technologies. (Examination).

LAW 6846. Philosophical Foundations/IP. 1 Credit.

Selected themes in the history and theory of intellectual property, including philosophical rationales for intellectual property rights, the debate over the limits to intellectual property protection from the 18th through the 20th centuries, and historical accounts of the intellectual property system. (Writing assignment).

LAW 6847. IP & Indigenous Heritage. 1 Credit.

Conflicts of customary law claims of indigenous peoples with industries operating under Western intellectual property systems over the use of natural resources, traditional knowledge, and folklore. National and regional legislation and efforts to develop international norms and standards. (Examination).

LAW 6848. Technology Licensing in EC. 1 Credit.

Legal issues arising from technology licensing in the European Community, including antitrust considerations in the framework of Art. 81 of the EC Treaty and the legal means of securing and enforcing technology license contracts. The Technology Transfer Block Exemption Regulation (EC) No. 139/2004 and the secured transactions laws of England and Germany. (Examination).

LAW 6849. Trademrks&GeogrpchlIndications. 0-2 Credits.

Regulation of terms that indicate or once indicated the geographic origin of goods or services (e.g., champagne, California Pizza Kitchen). Comparative study of U.S. and European Community approaches; the impact of international treaties, including the U.S.-EC dispute before the World Trade Organization; implications for affected industries; and broader cultural implications. (Examination).

LAW 6850. Law of Software Contracts. 1 Credit.

Contract and copyright issues arising out of software contracts. Contractual attempts to authorize or restrict copying and use of software; the proper legal characterization of software and software contracts; copyright limitations on contractual terms; formation of software contracts and potential remedies for their breach. (Examination).

LAW 6851. Copyright & Role of the Copy. 1 Credit.

Consideration of the changing role of the copy in copyright law and in cultural dissemination, using materials drawn from law, cultural history, sociology, and art theory. Articulation of features of traditional dissemination through discrete copies and the alteration of those features through digital network distribution and typical rights management permission bundles. The effect of audio and video recording and computer technologies on our understanding of the copy, and proposals for reform of the statutory exclusive rights. (Examination).

LAW 6852. European IP Law. 1 Credit.

LAW 6853. Chinese IP Law. 1 Credit.

LAW 6854. Artistic Freedom & Control. 1 Credit.

LAW 6870. National Security Law. 3 Credits.

U.S. law (and incorporated international law) affecting national security. Topics may include the use of armed force abroad (general war, defensive war and reprisal, peace and stabilization operations); intelligence operations abroad (history, organization and oversight, legal issues in the field); selected issues of counterterrorism; and access to and protection of classified information (classification, FOIA, state secrets privilege, leak control, prior restraints on publication). Students who have previously taken or are concurrently enrolled in Law 6875 must have the instructor's permission to enroll in this course. (Examination).

LAW 6871. U.S. Foreign Relations Law. 2-3 Credits.

The nature and origins of the federal government's foreign relations powers; cooperation and competition between the executive and legislative branches; the role of the courts in foreign affairs; limitations on state powers touching on foreign affairs; treaties, executive agreements, and customary international law and their relationship to U.S. domestic law; the extraterritorial application of U.S. law; and sovereign and official immunities. (Examination).

LAW 6872. Nat'l Security Law Seminar. 2 Credits.

Selected Topics in national security law to be announced at the time of registration. Enrollment is limited. (Research paper).

LAW 6873. Military Justice. 2-3 Credits.

The military justice system as a separate criminal justice system established by Congress due to the unique nature and mission of the U.S. Armed Forces. Policies, principles, standards, and rules governing the military justice process from investigation through trial and the appellate process. Review of the commander's role throughout the system. Detailed review of substantive military criminal law and peculiarly military offenses. Analysis of military criminal procedure as well as alternate actions available to dispose of criminal misconduct cases, including administrative separations from the Armed Forces. LL.M. students with prior military law experience may enroll only with the permission of the instructor. (Examination).

LAW 6874. Comparative Military Law. 2 Credits.

Analysis and critique of the broad concept of a separate military justice system; similarities between rules of evidence and rules of criminal procedure in the military and civilian systems; the role of Congress in overseeing the military criminal system; application of the First, Fourth, Fifth, and Sixth Amendments to service members; and broad policy issues such as the systemic challenges to the military justice system. (Examination or research paper with permission of the instructor).

LAW 6875. Counterterrorism Law. 2,3 Credits.

Analysis of legal mechanisms in the fields of criminal, civil, military, immigration, and administrative law used by the U.S. government to combat domestic and international terrorism. The effectiveness of government actions and alternatives for achieving public safety goals; the effect of such actions on U.S. citizens and citizens of other countries; and the reaction of federal courts and Congress to executive branch actions. Students who have previously taken or are concurrently enrolled in Law 6870 must have the instructor's permission to enroll in this course. (Take-home examination).

LAW 6876. Homeland Security Law & Policy. 2 Credits.

Legal issues related to homeland security before September 11, 2001, and the adoption of the Homeland Security Act of 2002. Protection of critical infrastructure; information sharing; liability for terrorist attacks; risk insurance; attempts to prevent the use of weapons of mass destruction; threats to electronic infrastructure; and combating the financing of terrorism. (Examination or take-home examination).

LAW 6877. Nuclear Nonprolif Law & Policy. 2-3 Credits.

The use of international agreements, legislation, and regulations to deter acts of nuclear terrorism. Major international agreements, programs, and efforts to stop nuclear proliferation. (Research paper).

LAW 6878. Intelligence Law. 2 Credits.

Identification and analysis of current legal questions that face intelligence practitioners. Constitutional, statutory, and executive authorities that govern the intelligence community; intelligence structures of other countries; the natural tension between law enforcement and intelligence activities. U.S. person protections, covert action, FISA, and data mining. The course may include application of intelligence law to hypothetical scenarios and student-generated legislative approaches to intelligence law problems. Recommended: Law 6870 or 6875. (Class presentation and research paper).

LAW 6879. Cybersecurity Law & Policy. 2 Credits.

Issues relating to the organization of the Internet and the federal government's response to cyberthreats. Legal concepts relating to the private sector and civilian government engagement in cyberspace. Application of traditional laws of armed conflict in the new cyberdomain. (Research paper or take-home examination with permission of the instructor).

LAW 6880. Disaster Law. 2 Credits.

The U.S. law applicable to natural and man-made catastrophes, including those caused by terrorist attacks and public health emergencies. Topics may include the role of federalism; pre-disaster mitigation and prevention programs; the National Response Framework; the role of the military; the tension between individual rights and government action in emergencies; disaster resistance, compensation, and insurance; long-term recovery; and international disasters. (Research paper).

LEGISLATIVE AFFAIRS (LGAF)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LGAF 6201. Politics and Public Policy. 3 Credits.

Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis. Topics include political and policy decision making, actors, and process.

LGAF 6202. Legislative Politics. 3 Credits.

Theory, structure, and process of the U.S. Congress, with emphasis on member-constituency relations, individual and collective decision making, party and committee activities, executive-legislative relations, and interest-group activities.

LGAF 6203. Executive-Legislative Relations. 3 Credits.

Political and institutional relationships between the executive and legislative branches of the federal government.

LGAF 6204. Research Methods for Legislative Affairs Specialists. 3 Credits.

Approaches to political analysis. Construction of research designs and problems of measurement.

LGAF 6210. Legislative Procedure. 3 Credits.

LGAF 6211. Congressional Leadership. 3 Credits.

LGAF 6212. Congressional Committees. 3 Credits.

LGAF 6217. Budgetary Politics. 3 Credits.

Examination of federal budget policymaking and politics.

LGAF 6218. Judicial Politics. 3 Credits.

Role of the judiciary in policy formulation; emphasis on Congress and the Supreme Court.

LGAF 6219. American Presidency. 3 Credits.

Personalized and institutionalized aspects of the presidency, with emphasis on the politics of contemporary policymaking.

LGAF 6221. ExecutiveBranchDecisionMaking. 3 Credits.

LGAF 6222. Parties and Elections. 3 Credits.

Nature and functions of American political parties: organizational status, nominating and electoral politics, and role in governing.

LGAF 6223. Public Opinion/Pol Socializatn. 3 Credits.

Sources and dynamics of public opinion and political socialization.

LGAF 6224. Interest Group Politics. 3 Credits.

Theory, structure, and activities of interest groups in America politics.

LGAF 6228. Media and Congressional Politics. 3 Credits.

Role of the media in American politics, with emphasis on news coverage, political debates, and political advertising, with their impact on the electorate.

LGAF 6233. Comparative Legislatures. 3 Credits.

Selected problems of legislative theory and behavior from a comparative perspective, with particular reference to the parliamentary systems of Germany, France, and Britain.

LGAF 6234. PACs and Congress. 3 Credits.

Examination of the structure and function of political action committees in the United States in the context of wider arenas of campaign finance, elections, and issue management.

LGAF 6240. Special Topics in Legislative Affairs. 3 Credits.

In-depth coverage of significant theoretical and empirical issues in American politics, including such topics as political behavior, electoral politics, and race and politics.

LGAF 6246. Congress & Foreign Policy. 3 Credits.

The role of Congress in setting foreign policy.

LGAF 6249. Congress and National Security Policy. 3 Credits.

The role of Congress in setting defense policy.

LGAF 6251. Budgetary Policy. 3 Credits.

Analysis of U.S. monetary and fiscal policy.

LGAF 6260. Special Topics: Domestic Policy. 3 Credits.

Analysis of U.S. policy on selected domestic problems.

LGAF 6270. Special Topics: Congress and Foreign Policy. 3 Credits.

Analysis of U.S. policy on selected issues, challenges, or world regions.

LGAF 6290. Independent Study. 1-3 Credits.

Directed readings in a topic related to Congress and public policymaking. Limited to Legislative Affairs degree candidates. Written permission of program director required.

LGAF 6299. Thesis. 3 Credits.

LGAF 6300. Thesis. 3 Credits.

LGAF 6998. Thesis. 3 Credits.

LGAF 6999. Thesis. 3 Credits.

LIFESTYLE, SPORT, AND PHYSICAL ACTIVITY (LSPA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LSPA 1011. Hiking. 1 Credit.

LSPA 1012. Dance Conditioning. 1 Credit.

LSPA 1013. Latin Dance Conditioning. 1 Credit.

LSPA 1014. Meditation. 1 Credit.

LSPA 1015. Japanese Swordsmanship. 1 Credit.

LSPA 1016. Running. 1 Credit.

LSPA 1017. Walking for Health. 1 Credit.

LSPA 1018. Trail Running. 1 Credit.

LSPA 1019. Outdoor Adventure. 1 Credit.

LSPA 1020. Beginning/Intermediate Golf. 1 Credit.
Course fee.

LSPA 1021. Foil Fencing. 1 Credit.

LSPA 1022. Basketball. 1 Credit.

LSPA 1023. Jow Ga Kung Fu. 1 Credit.

LSPA 1024. Volleyball. 1 Credit.

LSPA 1025. Thai Massage. 1 Credit.

LSPA 1026. Karate. 1 Credit.

LSPA 1027. Tennis. 1 Credit.

LSPA 1028. Massage. 1 Credit.
Course fee.

LSPA 1029. Yoga. 1 Credit.

LSPA 1030. Fitness. 1 Credit.

LSPA 1031. Conditioning with Weights. 1 Credit.

LSPA 1033. Swimming. 1 Credit.

LSPA 1034. Spinning. 1 Credit.

LSPA 1035. Rock Climbing. 1 Credit.

LSPA 1036. Triathlon. 1 Credit.

LSPA 1037. Indoor Soccer. 1 Credit.

LSPA 1038. Racquetball. 1 Credit.

LSPA 1039. Cardio-Kick-Boxing. 1 Credit.

LSPA 1040. Self-Defense and Personal Safety. 1 Credit.

LSPA 1041. Mat Pilates. 1 Credit.

LSPA 1042. Cardio Conditioning. 1 Credit.

LSPA 1043. Tai Chi. 1 Credit.

LSPA 1044. Aikido. 1 Credit.

LSPA 1045. Experimental Activities. 1 Credit.
Topic and laboratory fee (if charged) announced in Schedule of Classes.

LSPA 1046. Taekwondo. 1 Credit.

LSPA 1048. Horseback Riding. 1 Credit.
Course fee.

LSPA 1049. Boxing. 1 Credit.

LSPA 1050. Backpacking. 1 Credit.

LSPA 1051. Sailing. 1 Credit.

LSPA 1053. Squash. 1 Credit.
Equipment fee.

LSPA 1056. Scuba Diving Certification Course. 2 Credits.
This is an entry-level PADI (Professional Association of Diving Instructors) course, leading to international diver certification.
Course fee.

LSPA 1062. Conditioning/Weight Training. 1 Credit.

LSPA 1065. Introduction to Therapeutic Massage. 2 Credits.
Course fee.

LSPA 1066. Sports Massage. 1 Credit.
Course fee.

LSPA 1067. Group Fitness Instructor Training. 2 Credits.

LSPA 1068. Sports Clinic and Workshops. 1-3 Credits.
There may be a laboratory fee, amount announced in Schedule of Classes.

LSPA 1081. Kendo I. 1 Credit.

LSPA 1082. Kendo II. 1 Credit.

LSPA 1083. Iaido I. 1 Credit.

LSPA 1102. Personal Trainer Preparation. 1 Credit.

LSPA 2001. Special Topics. 1-3 Credits.

LINGUISTICS (LING)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LING 3601. Language, Culture, and Cognition. 3 Credits.

The role of language and culture in the organization of human experience. Beginning with debates about linguistic relativity, the course explores the way language use shapes cognition and practice in a variety of cultures and social contexts.
Prerequisites: ANTH 1004. (Same as ANTH 3601) (Fall, odd years).

LING 3602. Ethnographic Analysis of Speech. 3 Credits.

Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. Same as ANTH 3602. Prerequisite: ANTH 1004. Laboratory fee.

LING 3603. Psycholinguistics. 3 Credits.

Language as species-specific property of the human mind. Psychological processes involved in the encoding and decoding of language; first and second language acquisition and bilingualism. Same as ANTH 3603.

LING 3691. Special Topics in Linguistic Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as ANTH 3691.

Prerequisite: ANTH 1004 or permission of instructor.

MANAGEMENT (MGT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MGT 3201. Leadership. 3 Credits.

Leadership in organizations and in society. Consideration of whether leadership is a personal trait or a structured behavior and whether it is universal across domains or situation specific. Modern and historical examples; issues of leadership in popular contexts. Prerequisite: BADM 3101.

MGT 3202. Managerial Negotiations. 3 Credits.

Negotiation concepts, strategies, and tactics as applied to managerial situations. The nature of interdependencies; competitive and collaborative negotiations; negotiations involving third-party dynamics, such as mediation and arbitration. Employee relations, including employee rights; the impact of unions and collective bargaining on management practices.

MGT 3203. Applied Human Resource Management. 3 Credits.

The labor force and labor markets. The legal environment of human resource management. Human resource planning; employee recruiting, selection, training, development, compensation, motivation, discipline, health and safety. Prerequisite: BADM 3101.

MGT 3204. Contemporary Topics in HRM. 3 Credits.

Contemporary practice in human resource planning, recruitment and selection, training and development, performance management, compensation and benefits, employee relations, and international human resource management. Interaction with practitioners through actual situations, case analyses, and presentations. Prerequisite: BADM 3101.

MGT 4001. Women's Entrepreneurial Leadership. 3 Credits.

Development of the knowledge and skills needed to create a venture, which may include a social project, an arts initiative, or a new business.

MGT 4002. Product Development and Venturing. 3 Credits.

Students form entrepreneur teams to develop new products. Prerequisite: MGT 4101 or permission of instructor.

MGT 4003. Management of the Growing Entrepreneurial Venture. 3 Credits.

Examination of the data, dilemmas, and decisions that can confront leaders of post-startup entrepreneurial ventures.

MGT 4101. Small Business Management. 3 Credits.

Theory and practice of small business management. Focus on effective management, essentials of planning and organizing, and financial and administrative controls. Alternative business forms; purchase of ongoing firms; franchising; new business start-ups.

MGT 4102. Entrepreneurship. 3 Credits.

Key aspects of entrepreneurial success, from idea to development to launch, including opportunity identification, feasibility analysis, industry analysis, business models, venture funding, and mentor relationships.

MGT 4102W. Entrepreneurship. 3 Credits.**MGT 4900. Special Topics. 3 Credits.**

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

MGT 4900W. Special Topics. 3 Credits.**MGT 4995. Independent Research. 1-6 Credits.**

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

MGT 6210. Leading Teams. 3 Credits.

Knowledge and skills for effectively leading teams, including setting teams up for success, promoting effective team dynamics, and other leadership issues for contemporary teams that operate in a global, digital environment. (Fall, spring, and summer).

MGT 6213. Orgnztnl Factors/Pro of Change. 3 Credits.

Behavioral and organizational components of individual, team, and firm-wide change. The dynamics that often accompany the change process. (Fall).

MGT 6214. Consultative Processes. 3 Credits.

Theories and methods of planning, introducing, and coping with change in management through the helping process. Intended both for managers seeking an understanding of the consultative approach to planned change and for persons in staff or consultative roles seeking understanding of the consultative process. Same as SMPP 6214/ TSTD 6214.

MGT 6215. Conflict Management and Negotiations. 3 Credits.

The nature and sources of conflict and interdependence in social and organizational dynamics. Various means of resolving conflict, including the use of competitive and collaborative negotiations and mediation. Case discussion, exercises, role-playing, and simulation. Managers as mediators and negotiators. (Fall and spring).

MGT 6216. Cross-Cultural Management. 3 Credits.

The cultural foundations of organizations and institutions, with an emphasis on managerial behavior. Cross-cultural differences as they affect work-related behaviors, such as communication, attitude, teamwork, negotiation, and decision making. (Fall, spring, and summer).

MGT 6252. Global Human Resource Management. 3 Credits.

International applications of human resource management functions. Selection, preparation, and compensation of U.S. managers and executives for service abroad. Adaptation of human resource management policies to conform to specific cultural environments. (Fall and summer).

MGT 6253. Leadership and Executive Development. 3 Credits.

Theories of managerial leadership; issues and problems associated with leadership in large organizations at higher management levels: executive selection and development. (Fall).

MGT 6254. Negotiations and Labor Relations. 3 Credits.

Negotiation theory and practice in the context of labor-management relations in both union and nonunion settings. Emphasis on negotiation and conflict resolution skills, arbitration and grievance procedures, public-sector labor relations, labor laws and public policy, and global labor relations issues. (Spring).

MGT 6257. Performance Management and Development. 3 Credits.

Comprehensive review of performance appraisal and training and development. Students learn to develop customized training programs that relate to the performance appraisal process. (Spring).

MGT 6258. Applied Organization Leadership. 3 Credits.

In-depth studies of theories of leadership. Legal and ethical obligations of leadership. The leader in the process of assuming responsibility. Experiential exercises designed to develop the students' interpersonal abilities and leadership capacities. (Spring).

MGT 6259. Employment Law and Ethics. 3 Credits.

An examination of the interaction of legal requirements and personal ethics and their influence on managerial decisions affecting the employment exchange. Special emphasis on equal employment opportunity and civil rights, workers' compensation, occupational health and safety, collective bargaining, and wrongful discharge. (Fall).

MGT 6290. Special Topics. 0-3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

MGT 6291. Entrepreneurship. 3 Credits.

In exploring the "entrepreneur as a phenomenon," students will be exposed to the theory and experiences associated with entrepreneurs, entrepreneurial acts, and entrepreneurship in all organizational settings—large, small, public, and private. (Fall and spring).

MGT 6292. Small Business Management. 3 Credits.

The start-up process and management of small firms. Field projects involve student teams as consultants to local businesses. Case studies. Emphasis on total customer service, international opportunities, and minority and women's issues.

MGT 6293. New Venture Initiation. 3 Credits.

Essentials of planning a new business venture, sources of financing, evaluation of alternative new business ventures, and analysis of business functions. Creating and analyzing the business plan.

MGT 6294. Strategic Entrepreneurship. 3 Credits.

Capstone course for the small business/entrepreneurship concentration. Student teams assist companies in upgrading strategies.

MGT 6295. Family Business Strategies. 3 Credits.

Challenges of managing a family business: risk strategies; successor development and succession planning; stages of family business growth; family motivations and goals. Field projects provide hands-on experience.

MGT 6297. International Mgt Experience. 3 Credits.

Same as FINA 6297/ IBUS 6297/ MKTG 6297/ SMPP 6297. May be repeated for credit.

MGT 6298. Directed Readings & Research. 1-6 Credits.**MGT 6299. Thesis Seminar. 3 Credits.****MGT 6999. Thesis Research. 3 Credits.****MGT 8382. Fndtns/OrgnztlnBehavr&Devlpmnt. 3 Credits.**

The individuals and institutions central to the field of organizational behavior and development. Students read about, meet with, and discuss the work of persons central to the development of the field. Prerequisite: Doctoral candidate status with organizational behavior and development as a major or supporting field, or consent of instructor.

MGT 8383. Field Research in Organizational Settings. 3 Credits.

Applications of field research techniques in formal organizational settings. Examination of the logic of inquiry and techniques of qualitative data collection. Intensive interviewing and participant observation in field settings are emphasized. (Fall).

MGT 8385. Special Topics in Research Methods. 3 Credits.

Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers. (Fall and spring).

MGT 8386. Management Ideas in Progress. 3 Credits.

Doctoral students work with a variety of faculty members as they develop new ideas, research projects, and engage in seminal inquiry. The content and structure of the course will depend upon the instructor. Prerequisites: Doctoral candidate status with organizational behavior and development as a major or supporting field, or consent of instructor. (Fall and summer).

MGT 8390. Philosophy Foundations-Admin Research. 3 Credits.

Philosophy of science as applied to research in administration. Topics include the nature and current problems of epistemology, the development and role of theories, and the relationship between theory, methodology, and empirical data. (Fall and spring).

MGT 8391. Adv Prob-Research Methodology. 3 Credits.

Use of models and theoretical frameworks in research; formulation of research questions, hypotheses, operational definitions, research designs, sampling and data analysis approaches. For doctoral candidates who have completed the general examination and all courses and are preparing for their dissertation. (Fall and spring).

MGT 8397. Advanced Special Topics. 1-3 Credits.

Current research and scholarly issues in management science.

MGT 8998. Advanced Reading and Research. 1-12 Credits.

Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

MGT 8999. Dissertation Research. 1-12 Credits.

Limited to doctoral candidates. May be repeated for credit.

MARKETING (MKTG)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MKTG 3142. Consumer Behavior. 3 Credits.

Social, cultural, and psychological factors influencing the behavior of consumers. Models of buyer behavior, consumption patterns, market segmentation, attitude formation and change, brand loyalty, adoption of innovations, and store choice decisions. Marketing management and public policy implications of consumer research. Prerequisite: BADM 3401.

MKTG 3143. Marketing Research. 3 Credits.

Basic methods and techniques of market research. Designing a marketing research project: research questions, secondary and syndicated data, primary data collection approaches, data analysis and report presentation. Focus group interviews, questionnaire construction, statistical software packages. Prerequisite: BADM 3401 and STAT 2112 or STAT 2118.

MKTG 4148. Advertising. 3 Credits.

Planning an advertising campaign. Consumer and market information, message appeals, media selection and scheduling, measuring effectiveness. Current criticism and regulation of the advertising function. Other major marketing communication tools, including personal selling and sales promotion. Prerequisite: BADM 3401, MKTG 3142, and MKTG 3143.

MKTG 4149. Advanced Advertising Campaigns. 3 Credits.

Participation in the National Student Advertising Competition. Research, media planning, copywriting, layout/design. Travel to competition site. Prerequisite: BADM 3401 and MKTG 4148 and permission of instructor; corequisite: MKTG 4151.

MKTG 4150. Salesmanship and Sales Management. 3 Credits.

Development of personal selling and presentation skills; examination of types of selling situations. Organization of sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs. Prerequisite: BADM 3401; MKTG 3142. (Fall and spring).

MKTG 4151. Marketing Communications Planning. 3 Credits.

Components of a marketing communications plan. Writing a professional proposal, plans book, executive summary, and speech. Prerequisite: BADM 3401 and MKTG 4148; corequisite: MKTG 4149.

MKTG 4151W. Mktg Communications Planning. 3 Credits.

Components of a marketing communications plan. Writing a professional proposal, plans book, executive summary, and speech. Restricted to Permission of instructor required. Prerequisites: BADM 3401; MKTG 4148. (Spring).

MKTG 4152. Retailing Management. 3 Credits.

A study of retailing management and strategy covering the current environment of retailing, retail market and financial analysis, store location and design, inventory management, and non-store and service retailing. Industry executive and student presentations; case analyses. Prerequisites: BADM 3401; MKTG 3142; MKTG 3143. (Fall and spring).

MKTG 4159. Marketing Strategy. 3 Credits.

The capstone course for marketing majors. Analytical integration of material covered in previous marketing courses. Marketing strategy literature, financial dimensions of marketing decisions, and comprehensive cases. Prerequisite: MKTG 4148 or MKTG 4150. (Spring).

MKTG 4900. Special Topics. 0-3 Credits.

Experimental offering: new course topics and teaching methods. Prerequisites: BADM 3401; MKTG 3142; MKTG 3143. (Fall and spring).

MKTG 4900W. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Prerequisites: BADM 3401; MKTG 3142; MKTG 3143. (Fall and spring).

MKTG 4995. Independent Study. 1-12 Credits.

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: BADM 3401.

MKTG 6241. Advanced Marketing Management. 3 Credits.**MKTG 6242. Buyer Behavior. 3 Credits.****MKTG 6243. Marketing Research. 3 Credits.**

The marketing research process: designing, conducting, and using market research studies. Managing the market research project; qualitative research; survey and experimental designs; data analysis with statistical software packages. Prerequisite: MBAD 6221.

MKTG 6246. Marketing of Services. 3 Credits.**MKTG 6248. Advertising and Sales Promotion. 3 Credits.****MKTG 6250. Selling/Sales Management. 3 Credits.****MKTG 6251. Product Management. 3 Credits.****MKTG 6252. Digital Marketing. 3 Credits.**

The impact of technology on sales and marketing strategy. Areas explored include e-branding, customer relationship management, permission e-mail, sales force technology enhancement, mobile commerce, online marketing research, and electronic channels of distributions. (Spring) (Spring).

MKTG 6255. Strategic Brand Management. 3 Credits.**MKTG 6257. Marketing and Public Policy. 3 Credits.****MKTG 6259. Marketing Strategy. 3 Credits.**

Required capstone course for marketing students. Analysis of complex marketing problems involving policy and operational decisions; emphasis on creative marketing strategy.

MKTG 6290. Special Topics. 0-3 Credits.**MKTG 6297. International Management Experience. 3 Credits.**

Same as FINA 6297/ IBUS 6297/ MGT 6297/ SMPP 6297. May be repeated for credit.

MKTG 6298. Directed Readings and Research. 1 Credit.**MKTG 6299. Thesis Seminar. 3 Credits.****MKTG 6999. Thesis Research. 3 Credits.****MKTG 8341. Seminar: Marketing. 3 Credits.****MKTG 8397. Doctoral Seminar. 0-3 Credits.****MKTG 8998. Advanced Reading/Research. 1-12 Credits.**

Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

MKTG 8999. Dissertation Research. 1-12 Credits.

Limited to doctoral candidates. May be repeated for credit.

MASTER OF BUSINESS ADMINISTRATION (MBAD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MBAD 6200. Quantitative Methods and Computing Technologies. 1.5 Credit.

A rigorous review of equations, functions, finite mathematics, calculus, and basic accounting, addressed through the use of business applications.

MBAD 6201. Global Leadership of Business Enterprise. 0 Credits.

A series of required co-curricular workshops, seminars, company site visits and speakers. Topics include industry assessment, best practices in management, team building, business ethics, cross-cultural communication, and career development.

MBAD 6211. Financial Accounting. 3 Credits.

The basic concepts and methods used in financial reports for understanding their content and context. The income statement, balance sheet, and statement of cash flows. Detailed accounting procedures and choices. How the most important accounting procedures are calculated and how different choices impact financial statements. Prerequisites: None. (Same as ACCY 6101) (Fall, spring, and summer).

MBAD 6213. Managerial Accounting. 1.5 Credit.

Effective use of accounting information in decision making and control of organizations. Same as ACCY 6201. Prerequisites: MBAD 6211 or ACCY 6101. (Fall, spring, and summer).

MBAD 6221. Judgment, Uncertainty, and Decisions. 1.5 Credit.

Classical theories of decision making; recent findings on human cognitive limitations and biases. Analytical approaches useful in cases involving uncertainty, multiple objectives, and multiple stakeholders. (Fall, spring, and summer).

MBAD 6222. Data Analysis and Decisions. 1.5 Credit.

Statistical analysis—how it is used, when it should be used, and what can be learned from it. Statistical inference, hypothesis testing, and regression analysis. Prerequisite: MBAD 6221. (Fall, spring, and summer).

MBAD 6223. Operations Management. 1.5 Credit.

Concepts and techniques related to manufacturing and service operations. Process mapping, capacity analysis, production control, quality management, and supply chains. Integration of operations with a firm's overall business strategy as a powerful competitive weapon. Prerequisites: MBAD 6221 AND MBAD 6222; or MBAD 6224; or MBAD 6220; or DNSC 202. (Spring and summer).

MBAD 6224. Decision Making and Data Analysis. 3 Credits.

Elements of decision making that enable managers to characterize their strengths, assess the competition, and forecast the future. Deterministic and probabilistic decision models. Analytical approaches involving uncertainty, multiple objectives, and multiple stakeholders. Probability concepts are used to develop and apply statistical models, with both exploratory and inferential statistical techniques used, including sampling, estimation, and hypothesis testing. (Fall, spring, and summer).

MBAD 6233. Financial Markets. 1.5 Credit.

Sources of managerial information provided by money and capital markets, primary and secondary markets, and cash and futures markets. Money and capital market instruments, relevant return measures, risk metrics for bonds and equities. Prerequisite: MBAD 6212, MBAD 6222, MBAD 6242. (Fall, spring, and summer).

MBAD 6234. Financial Management. 0-1.5 Credits.

Theory, policy, and practice in financial management. Financial analysis, sources of funds, investing, capital planning and budgeting, dividend policy, and working capital management. Prerequisite: MBAD 6233. (Fall, spring, and summer).

MBAD 6235. Finance. 3 Credits.

Sources of managerial information that are provided by money and capital markets, primary and secondary markets, and cash and futures markets. Money and capital market instruments, relevant return measures, risk metrics for bonds and equities. Theory, policy, and practice of financial management are examined through the elements of financial analysis, sources of funds, investing, capital planning and budgeting, dividend policy, and working capital management. (Fall, spring, and summer).

MBAD 6241. Global Perspectives. 1.5 Credit.

Differences between the domestic and international environments and their implications for management. Differences in the organization of institutions of capitalism across countries. (Fall, spring, and summer).

MBAD 6242. Microeconomics for the World Economy. 1.5 Credit.

The economics of supply and demand in product markets. Theory of the firm (production and cost structure) and its competitive environment (perfect competition, monopoly, oligopoly, and monopolistic competition). (Fall, spring, and summer).

MBAD 6243. Macroeconomics for the World Economy. 1.5 Credit.

How firms are affected by the performance of the macro economy and the macroeconomic variables that should be factored into managers' decision-making processes. The behavior of output, employment, interest rates, inflation, and exchange rates. Prerequisite: MBAD 6242. (Fall, spring, and summer).

MBAD 6244. International Management. 1.5 Credit.

The challenges of operating in different cultures, implications of cross-national differences in institutional environments, and difficulties of designing effective organizational structures for coordination and control in multinational operations. Prerequisite: MBAD 6241. (Fall, spring, and summer).

MBAD 6245. Global Perspectives. 3 Credits.

How decisions and processes are modified for the complex global arena. Differences between the domestic and international environments and the implications for management; variations in the organization of institutions of capitalism across countries. Challenges of operating in different cultures, effects of national differences in institutional environments, and design of organizational structures for coordination and control in multinational operations. (Fall, spring, and summer).

MBAD 6252. Mgmt of Information Systems. 1.5 Credit.

An introduction to bridging the gap between the decision-making needs of managers and the terminology of technical personnel within an organization. The transformation of organizations in the digital economy.

MBAD 6253. Mgmt of Tech & Innovation. 1.5 Credit.

Business, technological, economic, and political factors that influence the development and adoption of new technology. Management concepts and practices useful in enhancing corporate innovation. Corporate venture divisions and organizational alternatives.

MBAD 6254. Database & Data Warehousing. 1.5 Credit.

An introduction to the model, design, and use of database and data warehousing systems for identifying, understanding, and designing database-centric solutions for business and organizations.

MBAD 6261. Organizations and Leadership. 1.5 Credit.

A behavioral perspective on core leadership concepts at the individual, team, and organizational level. Students apply these concepts to examine their own leadership qualities in organizations. Experiential exercises and participation in team projects. (Fall, spring, and summer).

MBAD 6262. Managing Human Capital. 1.5 Credit.

Issues of corporate culture, strategy implementation, growth management, employee recruitment and retention, organizational behavior, diversity, ethics, and legal aspects of business. How human resource policies and practices can become a source of competitive advantage. (Fall, spring, and summer).

MBAD 6263. Organizations and Human Capital. 3 Credits.

Formal and informal organizational dynamics as related to leading and managing human capital. Human capital is considered the most important organizational resource, and the realization of potential depends on substantive knowledge of the interplay between organization structure, processes, and practices. Topics include motivation and compensation, managing diversity, power and employee relations, organizational culture and change, leadership and decision making, as well as staffing and performance management. (Fall, spring, and summer).

MBAD 6265. Entrepreneurship. 1.5 Credit.

The "entrepreneur as a phenomenon." The theory as well as the experiences associated with entrepreneurs, entrepreneurial acts, and entrepreneurship in all organizational settings—large and small, public and private.

MBAD 6272. Nature of Markets. 1.5 Credit.

Marketing as an organizational function as well as a set of processes for creating, communicating, and delivering value to customers and for managing customer relationships in ways that benefit the organization and its stakeholders.

MBAD 6273. Marketing Decisions. 1.5 Credit.

Formulation and implementation of marketing strategy, applying the analytic perspectives, decision tools, and concepts of marketing to the elements of marketing strategy. Prerequisite: MBAD 6272.

MBAD 6274. Marketing. 3 Credits.

Marketing as an organizational function creating, communicating, and delivering value to customers while managing customer relationships in ways that benefit both the organization and its stakeholders. Formulation and implementation of the elements of marketing strategy through the application of concepts of marketing, analytic perspectives, and decision tools. (Fall, spring, and summer).

MBAD 6281. Business Ethics. 1.5 Credit.

Businesses are experiencing increasing challenges and opportunities to ensure that they demonstrate integrity in all of their activities, both internal and external to their operations. Perspectives, information, and skill development in advancing the value of integrity in business organizations. (Fall, spring, and summer).

MBAD 6284. Business and Public Policy. 1.5 Credit.

The theory and practice of managing organizations in the context of a rapidly changing global environment. Structure, design, and operation of organizations as interrelated systems and integration of internal and external environments. (Fall, spring, and summer).

MBAD 6285. Business Law. 1.5 Credit.

The legal environment of business, with particular attention to the liability of organizations and their managers for contracts, torts, and crimes. Strategies for avoiding litigation, including the development of clear, concise, and accurate writing. (Fall, spring, and summer).

MBAD 6286. Strategy Formulation and Implementation. 1.5 Credit.

An integrative approach to strategic management, stressing the general manager's perspective, strategy formulation, implementation of strategy and policy, and evaluation and control of strategy in various types of organizations. A capstone course to be taken after completion of all core requirements. Prerequisite: All other MBA core courses. (Fall, spring, and summer).

MBAD 6287. Strategy Fundamentals. 1.5 Credit.

An introductory approach to strategic management, stressing the general concepts and methodologies used in strategic management and providing a foundation for the MBA learning experience. (Fall, spring, and summer).

MBAD 6289. Business Ethics & Public Policy. 3 Credits.

Political, legal, social, economic, and ethical forces acting upon business. Interaction of the market system and public policy process in the development of law and regulation. (Fall, spring, and summer).

MBAD 6290. Special Topics. 0-3 Credits.

May be repeated to a maximum of 9 credits.

MBAD 6291. Business Communications. 0-1.5 Credits.

Practical and effective written and oral communication skills for the business environment. Focus on developing and delivering messages clearly, concisely, and effectively, and on learning to write in plain English. The purpose and mechanics of different forms of business communications. Strategies for routine communications challenges.

MBAD 6294. Consulting Abroad Project. 3 Credits.

A real-life experience in the global environment, projects are provided by international or foreign companies. A representative of the company visits GW to work with students during the associated practicum. Students work on projects during the seven-week practicum prior to the international residency. Corequisite: MBAD 6245. (Fall, spring, and summer).

MBAD 6295. Interdisciplinary Projects. 1-6 Credits.

Project and experiential studies of an interdisciplinary nature involving student teams and faculty from more than one field of study. May be repeated for credit. M.B.A. Program Director approval is required.

MBAD 6298. Grad Intrnshp/Business & Mgt. 0 Credits.

Structured practical experience. Permission of instructor required.

MATHEMATICS (MATH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MATH 1000. Dean's Seminar. 3 Credits.

MATH 1007. Mathematics and Politics. 3 Credits.

A mathematical treatment of fair representation, voting systems, power, and conflict. The impossibility theorems of Balinsky and Young and of Arrow. The electoral college. The prisoner's dilemma.

MATH 1008. History of Mathematics. 3 Credits.

The history of mathematics, with emphasis on its importance in the evolution of human thought. Students learn some useful mathematics from areas such as geometry, number theory, and probability and develop an appreciation of the mathematical endeavor.

MATH 1009. Mathematical Ideas I. 3 Credits.

Elementary mathematical models of growth and decay, scaling, chaos, and fractals.

MATH 1010. Mathematical Ideas II. 3 Credits.

Continuation of MATH 1009. Elementary graph theory, scheduling, probability theory.

MATH 1051. Finite Mathematics for the Social and Management Sciences. 3 Credits.

Systems of linear equations, matrix algebra, linear programming, probability theory, and mathematics of finance. Prerequisite: the placement examination or a score of 560 or above on the SAT II in mathematics.

MATH 1220. Calculus with Precalculus I. 3 Credits.

An introduction to single-variable calculus (differentiation and integration of algebraic and trigonometric functions with applications), with the concepts and techniques of precalculus developed as needed. Prerequisite: the placement examination or a score of 560 or above on the SAT II in mathematics. (Spring).

MATH 1221. Calculus with Precalculus II. 3 Credits.

Continuation of MATH 1220. An introduction to single-variable calculus (differentiation and integration of algebraic and trigonometric functions with applications), with the concepts and techniques of precalculus developed as needed. Prerequisites: MATH 1220. (Fall).

MATH 1231. Single-Variable Calculus I. 3 Credits.

Limits and continuity. Differentiation and integration of algebraic and trigonometric functions with applications. Prerequisite: the placement examination or a score of 720 or above on the SAT II in mathematics.

MATH 1232. Single-Variable Calculus II. 0-3 Credits.

The calculus of exponential and logarithmic functions. L'Hopital's rule. Techniques of integration. Infinite series and Taylor series. Polar coordinates. Prerequisite: MATH 1221 or MATH 1231.

MATH 1252. Calculus for the Social and Management Sciences. 3 Credits.

Differential and integral calculus of functions of one variable; applications to business and economics. Prerequisite: the placement examination or a score of 560 or above on the SAT II in mathematics.

MATH 2020. Joint Math and Physics Seminar. 1 Credit.

MATH 2184. Linear Algebra I. 0-3 Credits.

Linear equations, matrices, inverses, and determinants. Vector spaces, rank, eigenvalues, and diagonalization. Applications to geometry and ordinary differential equations. Credit may not be earned for both Math 2184 and 2185. Prerequisites: MATH 1221 or MATH 1231, or MATH 1051 and MATH 1252, or permission of instructor. (Fall).

MATH 2185. Linear Algebra I for Math Majors. 3 Credits.

For current or prospective math majors. Introduction to theory and computations involving linear equations, matrices, inverses, determinants, vector spaces, rank, eigenvalues, diagonalization, inner products, norms, and orthogonality. Reading and writing proofs is required. Credit may not be earned for both Math 2184 and 2185. Prerequisites: MATH 1221 or MATH 1231 or permission of instructor; prerequisite or corequisite: MATH 2971. (Fall).

MATH 2233. Multivariable Calculus. 0-3 Credits.

Partial derivatives and multiple integrals. Vector-valued functions. Topics in vector calculus, including line and surface integrals and the theorems of Gauss, Green, and Stokes. Prerequisite: MATH 1232.

MATH 2572. Introduction to Computing in Mathematics. 3 Credits.

An introduction to the use of computers in modern mathematics and a primer in basic programming skills covering Maple, Matlab, and LaTeX. Prerequisite: MATH 1221 or MATH 1231. Open to majors and to others with permission of instructor or the departmental undergraduate advisor.

MATH 2971. Introduction to Mathematical Reasoning. 3 Credits.

An introduction to the fundamental abstract concepts of modern mathematics as well as various proof techniques demonstrated on numerous examples taken from within discrete and continuous mathematics. Prerequisite or concurrent registration: Math 1232. Open to majors and to others with permission of instructor or the departmental undergraduate advisor.

MATH 2971W. Introduction to Mathematical Reasoning. 3 Credits.

MATH 2991. Introductory Special Topics. 1-3 Credits.

Admission by permission of instructor. May be repeated for credit.

MATH 3120. Elementary Number Theory. 3 Credits.

Divisibility of integers, prime numbers, greatest common divisor, the Euclidean algorithm, congruence, the Chinese remainder theorem, number theoretic functions, Möbius inversion, Euler's phi function, and applications to cryptography and primality testing. Prerequisite: MATH 2971 or permission of instructor.

MATH 3125. Linear Algebra II. 3 Credits.

Advanced topics in linear algebra such as duality of vector spaces, normal and self-adjoint operators, the singular value decomposition theorem, the spectral theorem, bilinear and quadratic forms, the geometry of orthogonal operators, the Jordan canonical form, and minimal polynomials. Prerequisites: MATH 2971 and MATH 2184; or MATH 2185; or permission of instructor. (Fall).

MATH 3257. Introduction to Complex Variables. 3 Credits.

Analytic functions and power series. Contour integration and the calculus of residues. Conformal mapping. Physical applications. Prerequisites: MATH 2233, MATH 2971, and MATH 2184 or 2185 or permission of instructor. (Fall).

MATH 3342. Ordinary Differential Equations. 3 Credits.

A first course in ordinary differential equations with an emphasis on mathematical modeling: solution curves, direction fields, existence and uniqueness, approximate solutions, first and second order linear equations, linear systems, phase portraits, and Laplace transforms. Prerequisites: MATH 1232 and MATH 2184 or MATH 2185 or permission of instructor. (Fall).

MATH 3343. Partial Differential Equations. 3 Credits.

A first course in partial differential equations: Fourier series and separation of variables, vibrations of a string, Sturm-Liouville problems, series solutions, Bessel's equation, linear partial differential equations, wave and heat equations, separation of variables. MATH 3342 is recommended. Prerequisites: MATH 2233 and MATH 2184 or MATH 2185 or permission of instructor. (Fall).

MATH 3359. Introduction to Mathematical Modeling. 3 Credits.

An introduction to the fundamental modeling ideas of dimensional analysis, scaling, and elementary approximations of curves and functions. Applications to development of models from science and engineering. Prerequisite: MATH 2572 and MATH 3342.

MATH 3410. Mathematics of Finance. 3 Credits.

A mathematical development and analysis of realistic models for financial option pricing. Mathematical underpinnings and financial concepts will be developed in parallel. Prerequisite: MATH 2233.

MATH 3411. Stochastic Calculus Methods in Finance. 3 Credits.

Review of probability theory. The Brownian motion. The Ito integrals. Ito's formula. Martingales. Stochastic differential equations. Kolmogorov's backward equation. The generator of an Ito diffusion. Boundary value problems and the Dirichlet problem. The Black-Scholes equation. Optimal stopping. American options. Prerequisite: MATH 2184 or MATH 2185 and MATH 3410 or permission of instructor.

MATH 3553. Introduction to Numerical Analysis. 3 Credits.

Accuracy and precision. Linear systems and matrices. Direct and iterative methods for solution of linear equations. Sparse matrices. Solution of nonlinear equations. Interpolation and approximate representation of functions, splines. MATH 2572 and either MATH 2184 or MATH 2185 are recommended. Prerequisites: MATH 2233 or permission of instructor. Recommended background: MATH 2572 and (MATH 2184 or MATH 2185) are recommended. (Fall).

MATH 3613. Introduction to Combinatorics. 3 Credits.

Introduction to combinatorial enumeration. Basic counting techniques, inclusion-exclusion principle, recurrence relations, generating functions, pigeonhole principle, bijective correspondences. Prerequisite: MATH 2971 or permission of instructor.

MATH 3632. Introduction to Graph Theory. 3 Credits.

Fundamental concepts, techniques, and results of graph theory. Topics include trees, connectivity, traversability, matchings, coverings, colorability, planarity, networks, and Polya enumeration. Prerequisite: MATH 2971 or permission of instructor.

MATH 3710. Introduction to Mathematical Logic. 3 Credits.

Symbolic logic as a precise formalization of deductive thought. Logical correctness of reasoning. Formal languages, interpretations, and truth. Propositional logic and first-order quantifier logic suited to deductions encountered in mathematics. Goedel's completeness theorem; compactness. Prerequisite: MATH 2971 or permission of instructor.

MATH 3720. Axiomatic Set Theory. 3 Credits.

Cantor's theory of sets. Russell's paradox. Axiomatization of set theory as a framework for a contradiction-free mathematics. The Zermelo-Fraenkel axioms and the axiom of choice. Finite, countable, and uncountable sets; ordinal and cardinal arithmetic. The continuum hypothesis. Prerequisite: MATH 2971 or permission of instructor.

MATH 3730. Computability Theory. 3 Credits.

The unlimited register machine as a model of an idealized computer. Computable and partial computable functions; Church-Turing thesis. Kleene's recursion theorem. Algorithmic enumerability. Unsolvability of the halting problem and other theoretical limitations on what computers can do. Discussion of Goedel's incompleteness theorem. Prerequisite: MATH 2971 or permission of instructor.

MATH 3740. Computational Complexity. 3 Credits.

Automata and languages. Deterministic and nondeterministic Turing machines. Space and time complexity measures and classes. The P versus NP problem. The traveling salesman problem and other NP-complete problems. Intractability. Circuit complexity. Introduction to probabilistic and quantum algorithms. Prerequisite: MATH 2971 or permission of instructor.

MATH 3806. Introduction to Topology. 3 Credits.

Metric spaces: completeness, compactness, continuity. Topological spaces: continuity, bases, subbases, separation axioms, compactness, local compactness, connectedness, product and quotient spaces. Prerequisite: MATH 2971 or permission of instructor.

MATH 3848. Differential Geometry. 3 Credits.

Curves in space, regular surfaces, tensors, fundamental forms of a surface. Gauss-Bonnet theory, minimal surfaces. The geometry of the Gauss map. Prerequisites: MATH 2233, MATH 2971, and MATH 2184 or MATH 2185; or permission of instructor. (Fall).

MATH 4121. Introduction to Abstract Algebra I. 3 Credits.

Study of groups and associated concepts, including Lagrange's theorem, Cayley's theorem, the fundamental theorem of homomorphisms, and applications to counting. Prerequisites: MATH 2971 and MATH 2184 or MATH 2185 or permission of instructor. (Fall).

MATH 4122. Introduction to Abstract Algebra II. 3 Credits.

Study of rings, through maximal and prime ideals, and the study of fields, through Galois theory. Prerequisite: MATH 4121 or permission of instructor.

MATH 4239. Real Analysis I. 3 Credits.

A rigorous study of differentiation, integration, and convergence. Topics include sequences and series, continuity and differentiability of real-valued functions of a real variable, the Riemann integral, sequences of functions, and power series. Prerequisite: MATH 1232 and MATH 2971 or permission of instructor. With permission of the advisor, qualified undergraduates may substitute MATH 6201 for this course.

MATH 4239W. Real Analysis I. 3 Credits.

A rigorous study of differentiation, integration, and convergence. Topics include sequences and series, continuity and differentiability of real-valued functions of a real variable, the Riemann integral, sequences of functions, and power series. Prerequisite: MATH 1232 and MATH 2971 or permission of instructor. With permission of the advisor, qualified undergraduates may substitute MATH 6201 for this course.

MATH 4240. Real Analysis II. 3 Credits.

Continuation of MATH 4239. Topics include: topology of \mathbb{R}^n , derivatives of functions of several variables, inverse and implicit function theorems, multiple integrals, generalized Stokes's theorem. With permission of the advisor, qualified undergraduates may substitute MATH 6202 for this course. Prerequisites: MATH 2233, MATH 2184 or MATH 2185, and MATH 4239; or permission of instructor. (Fall).

MATH 4981. Seminar: Topics in Mathematics. 3 Credits.

Past topics have included computational mathematics, fractals; network flows and combinatorial optimization; information theory and coding theory; dynamical systems; queuing theory. May be repeated for credit with permission. Prerequisites: MATH 2233 and MATH 2184 or 2185 or permission of instructor. (Fall).

MATH 4991. Special Topics. 1-12 Credits.

Admission by permission of instructor. May be repeated for credit.

MATH 4995. Reading and Research. 1-6 Credits.

Under the personal direction of an instructor. Limited to majors with demonstrated capability. Prior approval of instructor required. May be repeated for credit.

MATH 6101. Algebra I. 3 Credits.

Group theory including symmetric groups, free abelian groups, finitely generated abelian groups, Sylow theorems, solvable groups. Factorization in commutative rings, rings of polynomials, chain conditions, semisimple rings, Wedderburn-Artin theorems, Galois theory.

MATH 6102. Algebra II. 3 Credits.

Continuation of MATH 6101. Group theory including symmetric groups, free abelian groups, finitely generated abelian groups, Sylow theorems, solvable groups. Factorization in commutative rings, rings of polynomials, chain conditions, semisimple rings, Wedderburn-Artin theorems, Galois theory.

MATH 6120. Topics in Algebra. 3 Credits.

Topics chosen from Lie groups and Lie algebras, non-associative algebras, abelian groups, classical groups, algebraic number theory, representation theory, algebraic geometry, and ring theory. Prerequisite: MATH 6101- MATH 6102. May be repeated for credit with permission.

MATH 6201. Real Analysis I. 3 Credits.

A rigorous study of the real number system, metric spaces, topological spaces, product topology, convergence, continuity and differentiation. Topics include Dedekind's cuts, Tychonoff's theorem, sequences and series, Abel's theorem, continuity and differentiability of real-valued functions of a real variable. Credit may not be earned for both MATH 6201 and MATH 4239.

MATH 6202. Real Analysis II. 3 Credits.

Continuation of MATH 6201. Topics include Riemann-Stieltjes integrals, equicontinuity, Arzela-Ascoli theorem, Stone-Weierstrass theorem, derivatives of functions of several variables, contraction mapping theorem, inverse and implicit function theorems, differential forms, exterior differentiation, Stoke's theorem, differentiable manifolds. Credit may not be earned for both MATH 6202 and MATH 4240.

MATH 6214. Measure and Integration Theory. 3 Credits.

Lebesgue measure and integration in abstract spaces. Probability measures. Absolute continuity, the Radon-Nikodym theorem, measures on product spaces, and the Fubini theorem. LP spaces and their properties. Prerequisite: MATH 4239 .

MATH 6215. Introduction to Functional Analysis. 3 Credits.

Topological and metric spaces; Tychonoff theorem; Banach spaces; linear functionals and operators; Hahn-Banach, closed graph, and open-mapping theorems; uniform boundedness; Hilbert spaces; eigenvalues, projections. Prerequisite: MATH 6214 .

MATH 6225. Ergodic Theory. 3 Credits.

Ergodicity, mixing, the K-property and the Bernoulli property. Poincaré recurrence, the Rohlin lemma, the ergodic theorem, and entropy theory. Additional topics from isomorphism theory, spectral theory, the theory of joinings, and coding theory. Prerequisite: MATH 6214 or permission of instructor.

MATH 6226. Dynamical Systems and Chaos. 3 Credits.

Linear and nonlinear systems, flows, Poincaré maps, structural stability. Examples of chaotic systems in the physical sciences. Local bifurcations, center manifold theory, normal forms, the averaging theorem. Hyperbolic invariant sets, strange attractors, the Smale horseshoe, symbolic dynamics. Prerequisite: MATH 2184 and MATH 4240 or permission of instructor.

MATH 6230. Complex Analysis. 3 Credits.

Topology of the complex plane; complex differentiation and integration; Cauchy's theorem and its consequences; Taylor and Laurent series; classification of singularities; residue theory; conformal mapping; the Riemann mapping theorem. Prerequisite: Math 4239 .

MATH 6240. Topics in Real and Functional Analysis. 3 Credits.

Possible topics include Banach algebras, function algebras, spectral theory for bounded and unbounded operators, harmonic analysis on topological groups and semigroups, topological vector spaces and operator algebras. Prerequisite: permission of instructor. May be repeated for credit with permission.

MATH 6318. Applied Mathematics I. 3 Credits.

Dimensional analysis, perturbation methods, calculus of variations, boundary value problems in one dimension, eigenvalue problems, stability and bifurcation in nonlinear problems. Related numerical techniques. Prerequisite: MATH 2184 .

MATH 6319. Applied Mathematics II. 3 Credits.

Method of characteristics, shock waves, wave and heat equation, Laplace operator on a bounded region, maximum principles, Green's functions, Schrödinger's equation, spherical harmonics. Numerical methods for partial differential equations. Prerequisite: MATH 2184 .

MATH 6330. Ordinary Differential Equations. 3 Credits.

Existence and uniqueness of solutions, continuity and differentiability of solutions with respect to initial conditions. Properties of linear systems, phase portraits, planar systems and Poincaré-Bendixson theory. Prerequisite: MATH 4240.

MATH 6340. Modern Partial Differential Equations. 3 Credits.

Emphasis on modern theory and analytical techniques applied to the solution of partial differential equations. Topics include Sobolev spaces, generalized solutions, strong solutions and regularity; Sobolev imbedding theorem; Rellich-Kondrachov theorem; Leray-Schauder fixed-point theorems; nonlinear eigenvalue problems. Prerequisite: MATH 6319 or permission of instructor.

MATH 6350. Topics in Applied Mathematics. 3 Credits.

Possible topics include, but are not limited to, the calculus of variations, control theory, nonlinear partial differential equations, and mathematical programming. May be repeated for credit with permission.

MATH 6441. Introduction to Financial Mathematics. 3 Credits.

Elementary finance. Basic probability. Discrete random variables. Forwards, futures, and options. Options and arbitrage. The binomial model. Cox-Ross-Rubenstein formula. Martingales. Continuous random variables. The continuous model as a limit of the binomial model. Prerequisite: MATH 2184, MATH 2233.

MATH 6442. Stochastic Calculus Methods in Finance. 3 Credits.

Review of probability theory. The Brownian motion. The Ito integrals. Ito's formula. Martingales. Stochastic differential equations. Kolmogorov's backward equation. The generator of an Ito diffusion. Boundary value problems and the Dirichlet problem. The Black-Scholes equation. Optimal stopping. American options. Prerequisite: MATH 2184, MATH 2233.

MATH 6522. Introduction to Numerical Analysis. 3 Credits.

Computer arithmetic and round-off errors. Solution of linear and nonlinear systems. Interpolation and approximations. Numerical differentiation and integration. Eigenvalues and eigenvectors. Prerequisite: MATH 1232 and MATH 2184 and knowledge of a programming language.

MATH 6523. Numerical Solution of Ordinary and Partial Differential Equations. 3 Credits.

Initial and boundary value problems for ordinary differential equations. Error propagation, convergence and stability. Finite difference and finite element methods for partial differential equations. Prerequisite: MATH 3342 and knowledge of a programming language.

MATH 6540. Topics in Numerical Analysis. 3 Credits.

Numerical methods and software. Introductions to the methods, tools, and ideas of numerical computation. Problem solving using standard mathematical software. Interpolation; linear and nonlinear equations. Differential equations. Prerequisite: MATH 3342; knowledge of a programming language.

MATH 6610. Combinatorics. 3 Credits.

An introduction to fundamental methods and current research problems in partially ordered sets and enumeration. Prerequisite: undergraduate modern algebra and linear algebra or permission of instructor.

MATH 6620. Graph Theory. 3 Credits.

Graphical enumeration, factors, planarity and graph coloring, algebraic graph theory, extremal graph theory, applications. Prerequisite: undergraduate modern algebra and linear algebra or permission of instructor.

MATH 6630. Topics in Combinatorial Mathematics. 3 Credits.

Topics selected from a wide range of research subjects in combinatorics, its relations with other areas of mathematics, and applications. Recent selections have included matroid theory, topological methods in ordered sets, algebraic methods in combinatorics, fractional graph theory, combinatorics of polytopes, the symmetric group. May be repeated for credit with permission.

MATH 6710. Mathematical Logic. 3 Credits.

Model theory: the relation between a formal language (syntax) and its interpretations (semantics). Consistency, completeness, and compactness. Tarski's theorem on the inexpressibility of truth. Godel's incompleteness theorem and its impact on mathematics.

MATH 6720. Topics in Logic. 3 Credits.

Topics selected from a broad spectrum of areas of logic and applications, based on students' suggestions and interests. May be repeated for credit with permission.

MATH 6810. General Topology. 3 Credits.

Topological spaces, bases, open sets and closed sets; continuous maps and homeomorphisms; connectedness and compactness; metric topology, product topology and quotient topology; separation axioms; covering spaces and fundamental groups.

MATH 6820. Algebraic Topology. 3 Credits.

Fundamental groups and the Van Kampen theorem; simplicial complexes, simplicial homology, and Euler characteristic; singular homology, Mayer-Vietoris sequences. Topics may include cohomology, cup products, and Poincaré duality; classification of surfaces; knots and their fundamental groups. Prerequisite: MATH 6810 or permission of instructor.

MATH 6850. Knot Theory and Low Dimensional Topology. 3 Credits.

Introduction to fundamental methods and current research in knot theory and 3-dimensional topology. Topics include Reidemeister moves, Alexander invariants, Jones-type invariants, skein modules, Khovanov homology, incompressible surfaces, and torus decomposition. Prerequisite: MATH 6810 or permission of instructor.

MATH 6860. Topics in Knot Theory and Low Dimensional Topology. 3 Credits.

Possible topics include, but are not limited to, topology of 3-manifolds and work of Perelman, quantum invariants and their categorizations, topology of 4-manifolds after Freedman and Donaldson, computational complexity in topology, and applications in biology, chemistry, and physics. Prerequisite: MATH 6850 or permission of instructor. May be repeated for credit with permission.

MATH 6890. Topics in Topology. 3 Credits.

Topics may include hyperbolic structures on surfaces and 3-manifolds; knot theory; topology of 3-manifolds; topology of 4-manifolds. Prerequisite: MATH 6820 or permission of the instructor. May be repeated for credit with permission.

MATH 6995. Reading and Research. 1-12 Credits.

May be repeated for credit.

MATH 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

MECHANICAL AND AEROSPACE ENGINEERING (MAE)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MAE 1001. Introduction to Mechanical and Aerospace Engineering. 1 Credit.

Careers in mechanical and aerospace engineering and the necessary academic program. Teamworking and problem-solving skills for solution of design problems. Analytical and design problems and correlations between academic skills and the mechanical and aerospace engineering professions. Basic aspects of engineering ethics.

MAE 1004. Engineering Drawing and Computer Graphics. 0-3 Credits.

Introduction to technical drawing, including use of instruments, lettering, geometric construction, sketching, orthographic projection, section view, dimensioning, tolerancing, and pictorial drawing. Introduction to computer graphics, including topics covered in manual drawing and computer-aided drafting.

MAE 2117. Engineering Computations. 3 Credits.

Numerical methods for engineering applications. Round-off errors and discretization errors. Methods for solving systems of linear equations, root finding, curve fitting, numerical Fourier transform, and data approximation. Numerical differentiation and integration and numerical solution of differential equations. Computer applications. Prerequisite: CSCI 1121 or CSCI 1041.

MAE 2124. Linear Systems Analysis for Robotics. 3 Credits.

Properties of linear systems. Mathematical modeling of dynamic systems. State space, state variables, and their selection. Linearization of non-linear behavior. Matrix functions. Solution of state equations in the time domain and using transformations. System stability and frequency response.

MAE 2131. Thermodynamics. 3 Credits.

Fundamentals of equilibrium thermodynamics; Zeroth, First, and Second Laws. Work, heat, internal energy, enthalpy, thermodynamic potential functions; heat transfer mechanisms, phase diagrams, equations of state and property tables, power systems, refrigeration, heat pump systems. Reversible and irreversible processes, Carnot cycle, entropy, exergy. Prerequisite: PHYS 1021.

MAE 2170. History and Impact of the U.S. Patent System. 3 Credits.

Economic systems and emergence of the free market; role of the patent system in the industrial development of the United States; constitutional foundations; evolution of the U.S. patent system; landmark litigation; impact on future innovation; international aspects; the likely future of the patent system.

MAE 3120. Methods of Engineering Experimentation. 0-3 Credits.

Acquisition and analysis of experimental data. Laws of modeling and simulation. Report formulation and presentation. Basic principles of measuring instruments and sensors. Fundamentals of digital data acquisition and use of computer-based data systems. Strain gages, oscilloscopes, transducers, and computerized data systems. Prerequisite: MAE 2117.

MAE 3126. Fluid Mechanics I. 0-3 Credits.

Fluid properties, fluid statics, integral and differential formulations of conservation of mass, momentum, and energy. Bernoulli's equation. Dimensional analysis and similitude. Inviscid flow. Viscous flow. Experimental and computational methods in fluid mechanics. Prerequisite: APSC 2058.

MAE 3128. Biomechanics I. 3 Credits.

Mechanical analysis of biological systems. Characterization of living tissue. Applications of statics, solid mechanics, kinematics, and elementary dynamics to the human musculoskeletal system. May be taken for graduate credit with approval of department. Prerequisite: APSC 2057, CE 2220.

MAE 3134. Linear System Dynamics. 3 Credits.

Modeling of linear mechanical, electrical, and fluid systems as transfer functions and in state space. Linearization, discretization. Laplace and z-transforms. Natural frequencies and damping, free vibration, forced vibration. Measurement techniques, parameter estimation, and computer simulation. Time and frequency domain analysis. Prerequisite: APSC 2113; corequisite: APSC 2058.

MAE 3145. Orbital Mechanics and Spacecraft Dynamics. 3 Credits.

Coordinate systems and transformations, rocket equation, two-body problem, orbit transfers, orbit perturbations, attitude dynamics and stability of symmetric spacecraft, environmental and control torques. Prerequisite: APSC 2058. (Fall).

MAE 3155. Aerodynamics. 3 Credits.

Subsonic and supersonic aerodynamics: potential flow, lift and form drag, viscous effects, compressible flow. Prerequisite: MAE 3126.

MAE 3162. Aerospace Structures. 3 Credits.

Basic structural theory of lightweight aerospace structures. Development of shear and bending moment diagrams and stresses. Analysis of typical monocoque structures. External airloads and their distribution. Mechanical properties of metal and advanced composite structures. Design of members in tension, bending or torsion, and design of webs in shear. Prerequisite: APSC 2057 and CE 2220. (Spring).

MAE 3166. Materials Science and Enginrg. 3 Credits.

Mechanical properties, plastic deformation dislocation theory, yielding, strengthening mechanisms, microstructure and properties, heat treatment of steel, composites, amorphous materials, viscoelastic deformation, creep, fracture, fatigue, fatigue crack propagation. Prerequisite or concurrent registration: CHEM 1111, PHYS 1022.

MAE 3166W. Materials Science and Enginrg. 3 Credits.

Mechanical properties, plastic deformation dislocation theory, yielding, strengthening mechanisms, microstructure and properties, heat treatment of steel, composites, amorphous materials, viscoelastic deformation, creep, fracture, fatigue, fatigue crack propagation. Prerequisite or concurrent registration: CHEM 1111, PHYS 1022.

MAE 3167. Mechanics of Materials Lab. 1 Credit.

Measurement of strains and study of failure resulting from applied forces in ductile, brittle, anisotropic, elastomeric, plastic, and composite materials. Study of tension, compression, bending, impact, and shear failures. Prerequisite or concurrent registration: MAE 3166.

MAE 3171. Patent Law for Engineers. 3 Credits.

Types of patents; international patents; inventorship; prosecution process; basic references for patents; detailed structure of a patent; patentability requirements; reexamination and reissue; litigation; infringement and invalidity; copyrights, trademarks, and trade dress. May be taken for graduate credit with approval of department.

MAE 3184. Robotics Lab. 1 Credit.

Forward and inverse kinematics modeling of robots, control design, trajectory planning, and force rendering. Corequisite: MAE 3197.

MAE 3187. Heat Transfer. 3 Credits.

Steady- and unsteady-state heat conduction problems. Analytical and numerical solution methods. Convective heat transfer, boundary-layer approach, analogy between heat and momentum transfer. Thermal radiation; fundamental concepts and laws. Heat-exchanger design. Prerequisite: MAE 3126, MAE 2131.

MAE 3190. Analysis and Synthesis of Mechanisms. 3 Credits.

Kinematics and dynamics of mechanisms. Displacements, velocities, and accelerations in linkage, cam, and gear systems by analytical, graphical, and computer methods. Synthesis of linkages to meet prescribed performance requirements. Prerequisite: APSC 2058.

MAE 3191. Mechanical Design. 3 Credits.

Integration of knowledge of strength of materials in a design context. Stresses and deflections in engineering structures. Theories of failure. Introduction to the design of mechanical components, such as fasteners, shafts, springs. Introduction to the use of computers in mechanical engineering design. Prerequisite: CE 2220, MAE 2117.

MAE 3192. Manufacturing Processes and Systems. 3 Credits.

Introduction to manufacturing techniques for metals, polymers, ceramics, and composites. Relationships between properties of materials and techniques for processing them. Process selection, design, control, and integration. Computer-integrated manufacturing, robotics and assembly automation. Prerequisite or concurrent registration: MAE 1004.

MAE 3195. Computer-Aided Engineering of Mechanical Systems. 3 Credits.

Presentation of the major elements of computer-aided engineering systems: interactive computer graphics, finite element analysis, and design optimization. Consideration of economics, safety, and reliability factors. Prerequisite: MAE 4193; concurrent registration: MAE 3196.

MAE 3196. Computer-Aided Engineering Laboratory. 1 Credit.

Instruction and hands-on applications of computer-aided engineering systems to the design, analysis, and optimization of mechanical engineering components and systems. Concurrent registration: MAE 3195.

MAE 3197. Robotic Systems Design and Applications. 3 Credits.

Modeling and analysis of robot designs. Kinematics, statics, and dynamics of linkages. Design and selection of mechanical structures, actuators, transmissions, and sensors. Design of robotic control systems. Relevant computer hardware and software. Industrial applications and limitations of robot systems. Lab experiments. Same as ECE 4730. Prerequisite: MAE 3134.

MAE 4129. Biomechanics II. 3 Credits.

Mechanical analysis of physiological fluid dynamics. Application of fluid flow analysis techniques to cardiovascular, pulmonary, respiratory, and phonatory flows. Introduction to biomedical devices that manipulate physiological flows. May be taken for graduate credit with approval of department. Prerequisite: MAE 3128.

MAE 4149. Thermal Systems Design. 3 Credits.

Completion of a thermal systems design project that requires integration of engineering science, economics, reliability, safety, ethics, professional responsibility, and social considerations. Development and use of design methodology, optimization, feasibility considerations, detailed system descriptions, and presentation of results. Prerequisite: MAE 3187.

MAE 4152. Mechanical Engineering Laboratory. 2-3 Credits.

Project-oriented course. Simulates working environment of professional engineers. Projects are assigned in student's areas of interest; student is expected to design and assemble own experiments. Extensive use of instrumentation and computing facilities. Project proposal, progress reports, final report, and periodic oral presentations required. Prerequisite: MAE 3120.

MAE 4152W. Mechanical Engr Laboratory. 2,3 Credits.**MAE 4157. Aerodynamics Laboratory. 1 Credit.**

Subsonic and supersonic wind tunnel experiments and simulations. Prerequisite: MAE 3155. (Fall).

MAE 4163. Airplane Performance. 3 Credits.

Lift and drag estimation methods. Airplane performance measures, such as range and endurance, turning flight, specific excess power and acceleration, takeoff and landing performance. Longitudinal and lateral-direction static and dynamic stability. Control surface effectiveness. Prerequisites: MAE 3134. (Fall).

MAE 4168. Intro. to Biomaterials. 3 Credits.

Fundamentals of materials science and engineering applied to artificial materials in the human body. Topics include biocompatibility, techniques to minimize corrosion or other degradation of implant materials, and the use of artificial materials in various tissues and organs. Prerequisite: Approval of department. Course not open to MAE students.

MAE 4172. Engineering Design and the Patent System. 3 Credits.

Design experience in group projects involving following precisely the teachings of a licensed patent; or avoiding infringement of a provided patent while offering a competitive alternative; or evaluating a provided patent in light of prior art or by attempting to design a competitive product. May be taken for graduate credit with approval of department. Prerequisite: MAE 3171 and senior status.

MAE 4182. Electromechanical Control System Design. 3 Credits.

Application of control theory to the design of electromechanical systems. Transducers, valves, and other control components. Mathematical models of open- and closed-loop electromechanical systems. Root locus and frequency response methods; application to the synthesis of feedback systems by both manual and computer-aided techniques. Prerequisite: MAE 2117, MAE 3134.

MAE 4183. Controls Lab. 1 Credit.

Modeling, control design, simulation, implementation, tuning, and operation of a control system. Corequisite: MAE 4182.

MAE 4193. Engineering Systems Design. 3 Credits.

Creative engineering design, problem definition, and concept generation. Design of journal and roller element bearings, fasteners and permanent joints, and springs. Design project incorporating design selection, and optimization. Project presentation using graphical and computer resources. Prerequisite: MAE 3191.

MAE 4194. Mechatronics Design. 3 Credits.

Data acquisition and digital signal processing. Sensors and their characteristics—displacement, position/velocity, force/pressure, piezoelectric. Actuators—mechanical, electrical, pneumatic, hydraulic. Modeling and simulation of dynamic systems. Mechanism design. Digital control systems. Microprocessors, digital logic/circuits, motor drives. Lab experiments. Prerequisite: MAE 4182.

MAE 4198. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

MAE 4199. Student Design Project. 1-3 Credits.

Special student projects involving extensive design of various mechanical engineering systems. Examples include the solar car, mini-Baja, or other design competitions that typically are national in scope. May be taken for graduate credit by graduate students.

MAE 6201. Intro to Manufacturing. 3 Credits.

Fundamentals of modern manufacturing. Processes for manufacturing mechanical and electronic components from metals, polymers, ceramics, and silicon. Manufacturing systems, CAD, robotics, and design for assembly. Current capabilities, technological needs, and competitiveness. Examples from high-tech industries. Prerequisite: approval of department.

MAE 6203. Adv Experimentation Tech. 3 Credits.

Sensors; measurement of displacement, temperature, pressure and velocity. Optical methods. Signal conditioning. Computer data acquisition. Uncertainty analysis. Case studies of instrumentation systems such as hot-wire anemometers, laser-doppler anemometers, shlieren/shadowgraph and interferometers. Laboratory projects. (As arranged).

MAE 6204. Tissue Engineering. 3 Credits.

MAE 6207. Theory of Elasticity I. 3 Credits.

Introduction to Cartesian tensors; deformation, stress, constitutive relations for linear elasticity; formulation of boundary value problems, variational principles, torsion and bending of prismatic rods, plane problems. Prerequisite: approval of department. Same as CE 6207.

MAE 6210. Intro to Continuum Mechanics. 3 Credits.

Tensor analysis; fundamental concepts of continuum mechanics; kinematics of continuum; derivation of balance laws of mass, linear momentum, angular momentum, energy and entropy; axioms of constitutive theory; formulation of constitutive theories; Onsager's principle; objectivity; representation theorem for isotropic functions; plasticity, including concepts of internal variables, yield surface, return mapping algorithm. Prerequisite: approval of department.

MAE 6220. Applied Computational Fluid Dynamics. 3 Credits.

Basic principles of fluid dynamics and aerodynamics. Finite difference and finite volume methods. Fluid flow and heat transfer analysis of thermo-fluid mechanical systems. Computational aerodynamics codes. Individual hands-on experience with a commercial CFD code such as FLUENT. Prerequisite: approval of department.

MAE 6221. Fluid Mechanics. 3 Credits.

Continuum, kinematics of fluids; stress and strain rate tensors; fundamental equations of viscous compressible flows. Irrotational flows; sources, sinks, doublets, and vortices. Laminar flow of viscous incompressible fluids; boundary-layer concept. Prerequisite: approval of department.

MAE 6222. Applied Aerodynamics. 3 Credits.

Introduction to practical and computational methods for solving two-dimensional and three-dimensional aerodynamics problems. Linear methods, nonlinear potential methods, coordinate transforms, and boundary-layer methods. Prerequisite: MAE 6221, MAE 6286.

MAE 6223. Turbomachinery. 3 Credits.

Turbine, compressor, and pump types and uses; dimensional analysis of turbomachines; cycle analysis of gas and steam turbines; energy interchange in fluid machinery; design, characteristics, and performance of turbines, compressors, and pumps; comparison of types of turbines, compressors, and pumps. Prerequisite: MAE 6221.

MAE 6224. Viscous Flow. 3 Credits.

Exact solutions of Navier-Stokes equations; the laminar boundary-layer theory. Reynolds stresses and turbulence; internal, boundary-layer, and mixing flows. Applications to heat and mass transfer and to reacting flows. Prerequisite: APSC 6213, MAE 6221, .

MAE 6225. Computational Fluid Dynamics. 3 Credits.

Theory of discrete methods for solving the governing equations of fluid dynamics. Potential flow, Euler equations, Navier-Stokes equations. Emphasis on algorithm development appropriate to modern supercomputers. Prerequisite: MAE 6221, MAE 6286.

MAE 6226. Aero/Hydrodynamics. 3 Credits.

Inviscid flows in two and three dimensions and irrotational flow theory; conformal mapping and applications. Helmholtz theorems and vorticity dynamics. Applications such as airfoil theory, finite wing theory, panel methods, instabilities, free surface flow. Prerequisite: MAE 6221 .

MAE 6227. Aeroelasticity. 3 Credits.

Static and dynamic structural deformations; static aeroelasticity (structural deformation, divergence, control effectiveness, and reversal); dynamic aeroelasticity (flutter, response to gusts and turbulence); unsteady aerodynamics for 2-D wings; strip theory for 3-D lifting surfaces; piston and Newtonian-flow theories. Prerequisite: MAE 6221, MAE 6257.

MAE 6228. Compressible Flow. 3 Credits.

Thermodynamics and equations of compressible inviscid flow. One-dimensional flow. Isentropic flow. Normal and oblique shock waves. Quasi-one-dimensional flow. Unsteady one-dimensional and steady two-dimensional flow. Introduction to transonic flow. Prerequisite: APSC 6213, MAE 6221 .

MAE 6229. Propulsion. 3 Credits.

Basic concepts of propulsion: energy transformations in propulsive flows, gas dynamics of combustion. Thermal and propulsive efficiencies. Cycle and engine component analysis. Intake, nozzle performance. Drag and thrust generation. Augmentation. Propellers, turbojets, turbofans, ramjets, and rockets. Prerequisite: Graduate Standing or MAE 2131 and MAE 3126. (Spring).

MAE 6230. Space Propulsion. 3 Credits.

Advanced chemical propulsion: dynamic combustion and instabilities in solid propellants. Injection, atomization, mixing in liquid propellant engine performance. Plasma propulsion: electrostatic, electromagnetic, and electrothermal instabilities (laser and microwave). Nuclear propulsion. Prerequisite: MAE 6229.

MAE 6231. Structure and Transformations in Materials. 3 Credits.

Structure of crystals, crystal binding, crystal defects, dislocations, solid solutions, phases, diffusion, phase transformations, deformation twinning, and martensite. Prerequisite: APSC 2130.

MAE 6232. Fracture Mechanics. 3 Credits.

Concepts, history, and recent developments of fracture mechanics. Singularity at the crack tip; solutions around crack tip; stress intensity factors; energy release rate; J-integral; direction of crack extension; Plasticity and slow crack growth; dynamic crack propagation; molecular dynamics simulation of fracture. Prerequisite: approval of department.

MAE 6233. Mechanics of Composite Materials. 3 Credits.

Stress-strain relationship for orthotropic materials, invariant properties of an orthotropic lamina, biaxial strength theory for an orthotropic lamina. Mechanics of materials approach to stiffness, elasticity approach to stiffness. Classical lamination theory, strength of laminates. Statistical theory of fatigue damage. Same as CE 6209. Prerequisite: approval of department.

MAE 6234. Composite Materials. 3 Credits.

Principles of composites and composite reinforcement. Micromechanics and failure, interface reactions in various composites, reinforcing materials. Structure of composites: fiber-reinforced polymers, filler-reinforced polymers, fiber-reinforced metals, directionally solidified alloys, dispersion-strengthened metals. Prerequisite: approval of department.

MAE 6235. Deformation and Failure of Materials. 3 Credits.

Elastic and plastic deformation, yield, dislocation theory, strengthening mechanisms, creep, polymers, fracture, transition temperature, microstructure, fatigue. (Spring, odd years).

MAE 6237. Applied Electrochemistry. 3 Credits.

Charged interfaces, electrochemical cells, corrosion thermodynamics, electrode kinetics, general corrosion, crevice corrosion, pitting, stress-corrosion cracking, corrosion protection, batteries and fuel cells, energy storage. May include current and potential distribution in electrochemical cells and scaling effects in modeling. Prerequisite: approval of department.

MAE 6238. Biomaterials. 3 Credits.

Applications of materials science and engineering to artificial materials in the human body with the objective of detailed understanding of synthetic materials and biopolymers. Biocompatibility and its consequences on tissue-implant interfaces. Design and development of new implant materials, drug delivery systems, and biosensors. Prerequisite: MAE 3166 or MAE 4168.

MAE 6239. Computational Nanosciences. 3 Credits.

Introduction to surface force measurements in nanosciences; continuum contact mechanics in nanoscience research; intermolecular forces; empirical potentials for transition metals; surface forces in liquids; large-scale atomic/molecular massively parallel simulator; force field development from quantum mechanical density-functional theory for organic/metal molecular systems. Prerequisite: approval of department.

MAE 6240. Kinematic Synthesis. 3 Credits.

Techniques for the analysis and synthesis of function, path, and motion generating mechanisms. Methods for the dimensional design of mechanisms. Computer-aided techniques for the optimal design of planar linkages. Review of recent developments and current research. Term project. Prerequisite: MAE 3190 .

MAE 6241. Computer Models of Physical and Engineering Systems. 3 Credits.

Reduction of physical and engineering systems to simplified physical and mathematical models. Manipulation of models using C/C programming. Numerical algorithms for optimization, graph identification, mini-sum arithmetic, and searching. Styles of problem solving. Prerequisite: MAE 2117.

MAE 6242. Advanced Mechanisms. 3 Credits.

Emphasis on spatial kinematics. Analysis and synthesis of mechanisms. Analytical techniques using matrices, dual numbers, quaternion algebra, finite and instantaneous screws, theory of envelopes. Applications to design of linkages, cams, gears. Use of digital computers in mechanism analysis and design. (Spring, even years).

MAE 6243. Advanced Mechanical Engineering Design. 3 Credits.

Design of mechanical engineering components and systems emphasizing computer-aided engineering (CAE), including interactive computer graphics, finite element analysis, and design optimization. Creation of a complete design on an engineering workstation. Prerequisite: approval of department.

MAE 6244. Computer-Integrated Engineering Design. 3 Credits.

Design of engineering components and systems on engineering workstations using I-DEAS. Interactive computer graphics, finite element analysis, computer-based design optimization, and other relevant computer-based tools. Students apply design concepts in a computer-aided engineering environment to a selected project. Prerequisite: approval of department.

MAE 6245. Robotic Systems. 3 Credits.

Classification, features, and applications of industrial robots. Spatial descriptions and transformations, forward and inverse kinematics. Jacobian matrix, velocities and static forces, manipulator dynamics and controls. Robot actuators, transmissions, sensors, end effectors, and programming. Prerequisite: MAE 4182 .

MAE 6246. Electromechanical Control Systems. 3 Credits.

State-space representations of dynamic systems; dynamics of linear systems; controllability and observability; linear observers; compensator design by separation principle; linear-quadratic optimal control; Riccati equations; random processes; Kalman filter; applications of optimal stochastic control theory to robotics and earthquake engineering. Prerequisite: approval of department.

MAE 6247. Aircraft Design I. 3 Credits.

Conceptual design methods used in response to prescribed mission and performance requirements, alternate configuration concepts. Configuration general arrangement and empennage sizing. Estimation of aircraft size, weight, and balance; lift, thrust and drag; system level tradeoff and sensitivity studies. Prerequisite: Graduate Standing or MAE 4163. (Spring).

MAE 6248. Aircraft Design II. 3 Credits.

Preliminary design methods used to refine a conceptual aircraft configuration. Area ruling, computer-aided design methods and structural arrangement, estimation of aircraft static and dynamic stability and control sizing, inlet design, detailed tradeoff and sensitivity studies, economic and reliability considerations. (Spring).

MAE 6249. Spacecraft Design. 3 Credits.

Computer-aided design of spacecraft and satellites to meet specific mission requirements. Environment, propulsion, structure, heat transfer, orbital mechanics, control considerations. Use of modern computer codes for design studies. Prerequisite: Graduate Standing or MAE 3145. (Fall).

MAE 6250. Launch Vehicle Design. 3 Credits.

Computer-aided design of hypersonic launch vehicles to meet specific mission requirements. Propulsion, structures, flight path, aerothermochemistry, control considerations. Use of modern computer codes for design studies. Prerequisite: approval of department.

MAE 6251. Computer-Integrated Manufacturing. 3 Credits.

Automation techniques for processing metals, polymers, and composites. Use of sensing and process modeling in process control. Numerical control and robot applications and limitations. Integration, scheduling, and tool management in the computer-integrated factory. Quality control. Social and economic considerations in CIM. Prerequisite: MAE 3192 .

MAE 6252. Projects in Computer-Integrated Design and Manufacturing. 3 Credits.

Applications of the concepts of computer-integrated manufacturing to group projects, culminating in written and oral presentations. Robot programming, vision-guided assembly, force sensing, fixturing, and end-effector design for practical applications. Factory simulation, part scheduling, and NC program-verification algorithms. Prerequisite: MAE 6251.

MAE 6253. Aircraft Structures. 3 Credits.

Statics of thin-walled beams and panels, force interplay between stiffeners and skin in the analysis and design of stiffened thin-walled structures. Strength and stiffness of locally buckled stiffened structures. Design considerations. Critical evaluation of various design procedures. Prerequisite: approval of department.

MAE 6254. Applied Nonlinear Control. 3 Credits.

Dynamic characteristics of nonlinear systems. State stability and input-output stability. Lyapunov stability theory and invariance principle. Nonlinear control systems, including feedback linearization, back-stepping, sliding mode control, and passivity-based design. Applications to robotics, aircraft, and spacecraft control systems. Geometric controls and hybrid systems. Prerequisite: approval of department.

MAE 6255. Plasma Engineering in Aerospace and Nanotechnology. 3 Credits.

Plasma fundamentals, electromagnetic waves in plasma, plasma-wall interactions, modeling and experimental techniques in plasmas, electrical discharge, plasma propulsion, plasma-based nanotechnology. Prerequisite: MAE 3126.

MAE 6257. Theory of Vibration. 3 Credits.

Damped and undamped natural vibration, response of single- and multiple-degrees-of-freedom systems to steady-state and transient excitations, modal analysis, nonproportional damping and complex modes, variation formulation of equations of motion, discretization of structural systems for vibrational analysis. Prerequisite: approval of department.

MAE 6258. Adv. Vibration Analysis. 3 Credits.**MAE 6260. Nanomechanics. 3 Credits.**

Introduction to crystallography; interatomic potentials; phonon dispersion relations; molecular dynamics simulation; Nose-Hoover thermostat; coarse grained non-equilibrium molecular dynamics; multiple length/time scale theory of multi-physics; microcontinuum field theories; applications to nano materials/structures. Prerequisite: approval of department.

MAE 6261. Air Pollution. 3 Credits.

Introductory course on the generation, monitoring, and control of air pollution. Atmospheric pollutants; current levels and health problems. Combustion chemistry and mixing. Photochemical processes; smog and measurements. Atmospheric dispersion; inversion and acid rain. Prerequisite: approval of department.

MAE 6262. Energy Systems Analysis I. 3 Credits.

Analysis of energy resources and conversion devices. Statistical data analysis, forecasting, I/O, and net energy analyses, mathematical modeling. Prerequisite: approval of department.

MAE 6263. Advances in Energy Engineering. 3 Credits.

Review of thermodynamics, heat transfer, fluid dynamics, and materials technology used in the energy industries. New energy-efficient technologies in transportation and buildings; renewable energy (wind, solar, and biomass). Climate change and sustainability issues, such as carbon capture, cap and trade, carbon sequestration.

MAE 6270. Theoretical Acoustics. 3 Credits.

Basic acoustic theory in stationary and uniformly moving media; waves in infinite space; sound transmission through interfaces; sound radiation from simple solid boundaries, source and dipole fields; propagation in ducts and enclosures; elements of classical absorption of sound. Prerequisite: APSC 6213, MAE 6221.

MAE 6271. Time Series Analysis. 3 Credits.

Harmonic analysis of random signals; auto- and cross-correlations and spectra; coherence; modern techniques for spectral estimation, including fast Fourier transform, maximum entropy, and maximum likelihood; bias and variability; randomly sampled data; digital filtering; applications. Prerequisite: approval of department.

MAE 6273. Principles of Auto Flight Cont. 3 Credits.

Design of aeronautical instrumentation and feedback controls; mathematical models of sensors, controllers, and actuators; theory of feedback control, stability, accuracy, and speed of response; equalization effects of nonlinearities and noise. Prerequisite: approval of department. (Spring).

MAE 6274. Dynamics/Cntrl of Spacecraft. 3 Credits.

Fundamentals of satellite attitude dynamics and passive stabilization. Spacecraft attitude representation, rotational kinematics and kinetics. External torques. Dynamics of gyroscopes. Gravity gradient stabilization. Effect of internal energy dissipation on stability of spinning bodies and methods of despin. Dual spin satellites. Prerequisite: approval of department.

MAE 6275. Stability and Control of Aircraft. 3 Credits.

Derivation of equations of motion, Euler transformations and direction cosines, stability derivatives and linearization of equations of motion, stability of linear systems with application to longitudinal and lateral dynamics, Laplace transform techniques, and frequency-response analysis. Prerequisite: approval of department.

MAE 6276. Mechanics of Space Flight. 3 Credits.

Coordinate and time systems. Newton's laws; 2-, 3-, and n-body problems, Lagrange points, gravity-assisted trajectories, variation of parameters and orbit perturbations, non-central gravity effects, drag, sun-synchronous, and formation orbits. Numerical applications using MatLab. Prerequisite: approval of department.

MAE 6277. Spacecraft Attitude Control. 3 Credits.

Control of spinning and three-axis stabilized spacecraft. Elements of linear control theory for single-input, single-output systems and basic feedback control laws. Momentum management and actuator desaturation. Sensors for attitude determination. Application of modern control for multi-input, multi-output systems. Control system simulations using MatLab. (As arranged).

MAE 6278. Guidance/Nav of Spacecraft. 3 Credits.

Fundamentals of spacecraft guidance and navigation. Single, double, and multi-impulse orbit changes, Lambert's Theorem, rendezvous and interception, batch and sequential orbit determination, guidance strategies for fixed and variable flight time problems. Numerical applications using MatLab. (Fall, even years).

MAE 6280. Thermodynamics. 3 Credits.

Review of First and Second Laws of Thermodynamics and combining the two through exergy; entropy generation minimization and applications. Single phase systems, exergy analyses, multiphase systems, phase diagrams and the corresponding states principle. Prerequisite: approval of department.

MAE 6281. Advanced Thermodynamics. 3 Credits.

Development of classical and quantum statistical mechanics, including Maxwell-Boltzman distributions and microscopic origins of entropy and other thermodynamic variables. Partition functions and micro- and grand-canonical ensembles; Fermi-Dirac, Bose-Einstein, and intermediate statistics. Einstein and Debye models of solids. Prerequisite: MAE 6280 .

MAE 6282. Convective Heat/Mass Transfer. 3 Credits.

Heat and momentum transfer in laminar and turbulent flow. The laminar boundary-layer solution. Similarity and nondimensional parameters. Mass-momentum heat transfer analogy. Convective heat transfer at high velocity. Stability, transition, and turbulence. Free convection. Prerequisite: MAE 6221 .

MAE 6283. Radiative Heat Transfer. 3 Credits.

Basic concepts of heat transfer by thermal radiation starting from Planck's equation for blackbody radiation. Realistic engineering problems are addressed, some involving radiative heat transfer with a variety of surfaces, geometries, and enclosures. Radiative heat flow combined with conduction and convection boundaries. Prerequisite: approval of department.

MAE 6284. Combustion. 3 Credits.

Basic combustion phenomena. Rate processes and chemical kinetics. Chain reaction theory. Detonation, deflagration, diffusion flames, heterogeneous combustion. Experimental measurements. Impact of pollution regulations and alternate fuels. Prerequisite: approval of department.

MAE 6286. Numerical Solution Techniques in Mechanical and Aerospace Engineering. 3 Credits.

Development of finite difference and finite element techniques for solving elliptic, parabolic, and hyperbolic partial differential equations. Prerequisite: APSC 6213.

MAE 6287. Applied Finite Element Methods. 3 Credits.

Review of theory of elasticity. Basic aspects of theory and application of finite element methods. Utilization of MSC/NASTRAN for static, dynamic, linear, and nonlinear analyses of problems in mechanical, aeronautical, and astronautical engineering. Course emphasizes individual hands-on experience with the MSC/NASTRAN code. Prerequisite: approval of department.

MAE 6288. Advanced Finite Element Analysis. 3 Credits.

Review of variational formulation of the finite element method. Finite element analysis of large-strain thermomechanics. Applications to static and dynamic problems in finite elasticity, Fung elasticity (biomechanics), nonlocal theory, active stress in living biological tissues, biological growth, and large-strain plasticity. Recent developments in finite element methods. Same as CE 8330. Prerequisite: approval of department.

MAE 6290. Special Topics in Materials Science. 3 Credits.

Selected subjects of current interest. Arranged by consultation between department faculty and students. Typical topics include experimental methods in materials science and nondestructive inspection of materials. Prerequisite: approval of department.

MAE 6291. Special Topics in Mechanical Engineering. 3 Credits.

Selected subjects of current interest. Arranged by consultation between department faculty and students. Typical topics include tribology, power systems design, solar heating systems, HVAC, and plasticity theory. Prerequisite: approval of department.

MAE 6292. Special Topics in Aerospace Engineering. 3 Credits.

Selected subjects of current interest. Arranged by consultation between department faculty and students. Typical topics include environmental noise control, aeroacoustics, hypersonic flow, and flight vehicle aerodynamics. May be repeated for credit. Prerequisite: approval of department.

MAE 6298. Research. 1-6 Credits.

Basic research projects as arranged. May be repeated for credit.

MAE 6998. MS Thesis Research. 3 Credits.**MAE 6999. MS Thesis Research. 3 Credits.****MAE 8350. Advanced Topics in Materials Science. 3 Credits.**

Topics such as surface science that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: approval of department.

MAE 8351. Advanced Topics in Mechanical Engineering. 3 Credits.

Topics such as advanced analytical mechanics, advanced mechanics of continua, and advanced theory of elasticity that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: approval of department.

MAE 8352. Advanced Topics in Aerospace Engineering. 3 Credits.

Topics such as nonsteady flow, physical gas dynamics, turbulence, and nonlinear wave propagation that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: approval of department.

MAE 8998. Advanced Reading & Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy qualifying examination. May be repeated for credit.

MAE 8999. Dissertation Research. 1-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

MEDICAL LABORATORY SCIENCE (MLS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MLS 1070. Clinical Laboratory Rotation I. 10 Credits.

MLS 1071. Clinical Laboratory Rotation II. 10 Credits.

MLS 1080. Intro to Laboratory Medicine. 0 Credits.

MLS 1081. Clinical Chemistry I. 6 Credits.

MLS 1082. Clinical Chemistry II. 6 Credits.

MLS 1083. Hematology I. 4 Credits.

MLS 1084. Hematology II. 3 Credits.

MLS 1085. Urinalysis and Body Fluids. 2 Credits.

MLS 1086. Clinical Immunology. 2 Credits.

MLS 1087. Blood Banking I. 4 Credits.

MLS 1088. Blood Banking II. 3 Credits.

MLS 1089. Clinical Microbiology I. 5 Credits.

MLS 1090. Clinical Microbiology II. 5 Credits.

MLS 2000. Biology for Health Sciences. 3 Credits.

This course will cover key concepts in biology with an emphasis on the similarities and differences between organisms and how they interact with their environment and with each other. (Fall, spring, and summer).

MLS 2001. Chemistry for Health Sciences. 3 Credits.

An introduction to basic concepts in general, organic and biological chemistry, including the nature of matter, chemical reactions, stoichiometry, solutions, and the chemistry of biomolecules. (Fall, spring, and summer).

MLS 4101. Introduction to Cytotechnology. 5 Credits.

MLS 4102. Gynecologic Cytology. 3 Credits.

MLS 4106. Urogenital System Cytology. 2 Credits.

MLS 4114. Clinical Microbiology. 2 Credits.

MLS 4115. Parasitology and Mycology. 1 Credit.

MLS 4118. Laboratory Operations. 1 Credit.

MLS 4120. Urinalysis & Body Fluids. 1 Credit.

MLS 4122. Clinical Chemistry. 3 Credits.

MLS 4124. Clinical Microbiology II. 2 Credits.

MLS 4126. Immunohematology II. 2 Credits.

MLS 4127. Clinical Immunology. 1 Credit.

MLS 4128. Hematology I. 2 Credits.

MLS 4129. Hematology II. 2 Credits.

MLS 4140. Clinical Laboratory Mgt. 3 Credits.

MLS 4141. Immunology and Serology. 1-12 Credits.

MLS 4145. Clinical Biochemistry. 3 Credits.

MLS 4150. Immunohematology. 3 Credits.

MLS 4151. Molecular Diagnostics. 3 Credits.

MLS 4155. Clinical Biochemistry II. 2 Credits.

MLS 4159. Capstone Seminar. 1 Credit.

MLS 4160. Blood Bank Practicum. 3 Credits.

MLS 4161. Clinical Biochemistry Practicum. 4 Credits.

MLS 4162. Hematology and Hemostasis Practicum. 3 Credits.

MLS 4163. Immunology and Serology Practicum. 1 Credit.

MLS 4164. Clinical Microbiology Practicum. 4 Credits.

MLS 4165. Urinalysis and Body Fluids Practicum. 1 Credit.

MLS 6114. Advanced Clinical Microbiology I. 2 Credits.

Pathogenic characteristics, isolation techniques, specimen collection and handling, laboratory identification, and treatment of medically significant bacteria and viruses with emphasis on current diagnostic techniques used in clinical practice. (Fall, spring, and summer).

MLS 6115. Advanced Clinical Parasitology and Mycology. 1 Credit.

A systematic approach to the biology and epidemiology of human parasitic and fungal diseases. The symptomology, pathology, diagnostic procedures, and treatment of the various parasites and fungi that infect humans. Other topics include disease causation and specimen collection/handling. (Fall, spring, and summer).

MLS 6124. Advanced Clinical Microbiology II. 2 Credits.

The etiology of infectious diseases in different body sites using a case study approach. The epidemiology, pathogenic mechanisms, and laboratory identification of suspected etiologic agents. Commonly encountered clinical species are discussed using case studies that include clinical history, signs and symptoms, and laboratory test results of diseases produced by the etiologic agents. (Fall, spring, and summer).

MLS 6140. Advanced Laboratory Management. 3 Credits.

A problem-based approach to the principles of laboratory management with focus on managerial concepts that provide opportunities to apply theoretical management models to real-life situations in the clinical laboratory. (Fall, spring, and summer).

MLS 6141. Advanced Immunology and Serology. 3 Credits.

Principles of the immune system and the clinical applications of immunology related to the diagnosis of human diseases. Components of the immune system and the functions of each. The various immune-related diseases and how immunologic assays are used in the clinical setting to diagnose and monitor various disease states. (Fall, spring, and summer).

MLS 6151. Advanced Molecular Diagnostics. 3 Credits.

An overview of molecular biology and genetic concepts as well as the molecular techniques used to diagnose human diseases. The technology, theory, and methodology of molecular protocols utilized within a clinical and research laboratory setting. (Fall, spring, and summer).

MLS 6166. Molecular Diagnostics Practicum. 3 Credits.

During this practicum course, the student will actively engage in applying molecular techniques to diagnose various human diseases. (Fall, spring, and summer).

MLS 6201. Advanced Clinical Biochemistry. 3 Credits.

The structure and function of biological molecules, including proteins, carbohydrates, lipids, nucleic acids, vitamins, hormones, and buffers as well as their anabolism, catabolism, and regulatory mechanisms. The role of these molecules with regard to human health and the manifestation of disease. (Fall).

MLS 6203. Clinical Immunohematology I. 5 Credits.**MLS 6204. Clinical Immunohematology II. 5 Credits.****MLS 6207. Clinicl Pract: Blood Banking I. 5 Credits.****MLS 6208. Clinicl Pract: Blood BankingII. 5 Credits.****MLS 6209. Clinicl Pract:Blood BankingIII. 5 Credits.****MLS 6210. Clinicl Immun:Prin & Lab Diag. 4 Credits.****MLS 6211. Hematopoiesis &Blood Pathophys. 2 Credits.****MLS 6212. Organiz & Mgt of Blood Banks. 3 Credits.****MLS 6213. Seminar in Immunohematology. 2 Credits.****MLS 6214. Specialized Practicum. 4 Credits.****MLS 6215. Research Project. 3 Credits.****MLS 6216. Microbial Pathogenesis. 3 Credits.**

A comprehensive overview of the molecular basis of diseases caused by microbial pathogens with a focus on model microbial systems to illustrate mechanisms of the human infectious disease process. (Fall, spring, and summer).

MLS 6217. Medical Biotechnology. 2 Credits.

A comprehensive overview of current molecular technologies and how they are used in modern medicine. (Fall, spring, and summer).

MLS 6218. Genetics. 3 Credits.

This course will cover hereditary and molecular genetics, with an emphasis on genomics and human diseases. (Fall, spring, and summer).

MLS 6219. Molecular Biology. 3 Credits.

This course will emphasize the molecular mechanisms of DNA replication, repair, transcription, translation and gene regulation in prokaryotic and eukaryotic cells. (Fall, spring, and summer).

MLS 6242. Molecular Pathology. 3 Credits.

This course will investigate human disease processes with an emphasis on the molecular and genetic mechanisms of disease. The goal of this class is to advance students' understanding of how molecular, cellular and genetic approaches are used to investigate human diseases. Current knowledge of the molecular and cellular events which lead to various human diseases will be covered, including cardiovascular, neurological and musculoskeletal abnormalities, autoimmunity, endocrine defects, infectious disease and cancer. Through lectures, assigned readings and discussions, current applications and limitations of modern diagnostic medicine and the importance of basic and applied research to further the understanding of human disease will be addressed.

MLS 6243. Education & Assessment in MLS. 3 Credits.

This course studies the process of instructional design and applied to the education and training of MLS professionals. Topics include a fundamental review of instructional strategies, needs assessment, task analysis, analysis of subject-matter content, the development of goals and objectives, lesson design, and the assessment of instructional outcomes. This is a project-oriented course in which students will design, develop, and evaluate a set of MLS instructional materials and assessment tools. In addition, current trends in instructional design as applied to the MLS field will be explored.

MLS 6244. Research Ethics & Integrity. 3 Credits.

This course will address traditional and modern topics in research ethics and scientific integrity. The purpose of this course is to emphasize ethical theory and principles of bioethics while planning and conducting scientific studies. Through lectures, reading assignments, case studies and discussion sessions, the following topics will be covered: ethical theory and principles, scientific and academic integrity, informed consent in research; Institutional Review Boards and the use of human subjects in research. IACUC and the use of animals in research, Institutional Biosafety Committees and the use of recombinant DNA in research; conflicts of interest and commitment; authorship and publication; the peer-review process; collaboration and mentoring; methodology, data reporting and data management; ownership of data and intellectual property; whistleblowing and dispute resolution; and privacy and confidentiality. Students will learn to conduct unbiased peer-review, conduct research and report on an independent examination of a case of research misconduct or other ethical issue, and participate in oral scientific and ethical discussions.

MLS 6245. Current Topics in MLS. 3 Credits.

This course covers novel findings within each area of the medical laboratory science field, including Hematology and Hemostasis, Immunology and Serology, Clinical Microbiology, Immunohematology, Clinical Chemistry, Molecular Diagnostics, and Laboratory Operations and Management. The course will broaden the student's awareness of novel trends and findings and afford the opportunity for students to stay current in the ever-changing field of laboratory medicine. The overall goal of this course is to enhance critical thinking and problem solving skills. The current topics will be integrated into the development of a required project proposal for the capstone research project that the student will complete the following semester.

MLS 6246. Capstone Project. 3 Credits.

This course will allow students to apply the knowledge gained throughout the program through the completion of an independent, mentored project. A proposal for the capstone project will have been developed by the student as a component of the Current Topics course during the previous semester.

MICROBIOLOGY, IMMUNOLOGY, AND TROPICAL MEDICINE (MICR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MICR 6201. Medical Microbiology. 5 Credits.

Basic principles of medical microbiology (primarily bacteriology, virology, genetics, parasitology, and mycology), including microbial pathogenesis, and clinical infectious diseases. An interdisciplinary approach to the study of infectious organisms and associated diseases by combining aspects of fundamental microbiology, infectious disease, pharmacology, and pathology.

MICR 6202. Immunology. 2 Credits.

The structure and function of the immune system in health and disease, with emphasis on human immunobiology. Topics include humoral and cellular immune responses, immunological tolerance and memory, resistance to microbial pathogens, inflammation and allergy.

MICR 6212. Pathogenic Bacteriology. 2 Credits.

Molecular basis of bacterial pathogens and host-pathogen interactions. Prerequisites: MICR 8210 or permission of instructor. (Fall).

MICR 6220. Biology of Parasitism: Parasite Strategies of Infection, Survival, and Transmission. 2 Credits.

A comprehensive course examining the strategies parasites use to infect their hosts, how they survive and thrive within their host, and the developmental adaptations they use to ensure transmission of their offspring to the next host. Prerequisite: BISC 2339 or permission of instructor.

MICR 6228. Selected Topics-Microbiology. 2 Credits.**MICR 6229. Immunobiology of Infections. 2 Credits.****MICR 6233. Virology. 2 Credits.**

Biochemical, genetic, and pathogenic characterization of viruses. Prerequisites: MICR 8210 or permission of instructor. (Spring).

MICR 6234. Virology Laboratory. 2 Credits.**MICR 6235. Human and Transforming Viruses. 3 Credits.**

Current concepts of transformation and disease caused by RNA and DNA viruses. Prerequisite: MICR 6233 or MICR 8210.

MICR 6236. Fdmntls/Geonomics&Proteomics I. 2-3 Credits.

Same as Bioc 6236.

MICR 6237. Fdmntls/Geonomics&ProteomicsII. 2 Credits.

Same as Bioc 6237.

MICR 6238. Public Health Laboratory Works. 2 Credits.**MICR 6241. Survey-Molecular Bio Technique. 3 Credits.****MICR 6250. Applied Bioinformatics. 2 Credits.**

Bioinformatics tools available for DNA/RNA and protein sequence analysis, structural analysis, and data mining. Prerequisite: MICR 6236 or permission of instructor.

MICR 6258. Microbial Genetics. 2 Credits.**MICR 6277. Seminar: Microbiology. 1 Credit.**

MICR 6278. Seminar: Microbiology. 1 Credit.

MICR 6283. Virology. 1-12 Credits.

MICR 6290. Extramural Microbiology Elective. 1-12 Credits.

MICR 6291. Extramural Microbiology Elective. 1-12 Credits.

MICR 6292. Tropical Infectious Diseases. 2 Credits.

Lecture course. Pathogenesis, natural history, and epidemiology of the major infectious diseases that occur in developing countries.

MICR 6293. Special Topics. 1-12 Credits.

Selected topics in microbiology. May be repeated for credit provided the topic differs.

MICR 6294. Research-Clinical Microbiology. 3 Credits.

MICR 6295. Research. 1-12 Credits.

MICR 8210. Infection and Immunity. 3 Credits.

An introduction to the fields of virology, bacteriology, and parasitology, as well as the main concepts of immune response.

MICR 8230. Molecular and Cellular Immunology. 3 Credits.

Major aspects of immunology, including T and B cell effector function, innate immune cell function, mucosal immunology, and immune regulation. Prerequisite: MICR 8210 with approval of staff.

MICR 8270. Advanced Topics in Immunology. 3 Credits.

Seminar series on topics chosen jointly by students and faculty; students present and critique original manuscripts. May be repeated for credit. Prerequisite: MICR 8210, MICR 8230, or approval of staff.

MICR 8998. Advanced Reading and Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

MICR 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

MOLECULAR MEDICINE (MMED)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MMED 8214. Molecular Medicine Seminar. 2 Credits.

Research topics in molecular medicine, including oncology, cellular and behavioral neuroscience, pharmacology, physiology, and pathophysiology. May be repeated for credit. Prerequisite: BMSC 8210, BMSC 8212, and consent of instructor.

MMED 8221. The Basic Science of Oncology. 3 Credits.

Epidemiology, genetics, viruses, oncogenes, chemical carcinogenesis, radiation carcinogenesis, tumor growth, metastasis, biochemistry of cancer cells, tumor markers, hormones and cancer, cancer immunobiology, radiotherapy, chemotherapy and immunotherapy.

MMED 8222. Molecular Oncology. 2 Credits.

Seminar course dealing with molecular basis for the topics introduced in MMed 8221.

MMED 8281. Molecular Pharmacology and Neurobiology of Excitable Tissues. 3 Credits.

The purpose of this course is to teach graduate students in the biological sciences the basic principles of molecular pharmacology and neurobiology of excitable tissues, and the methods used in these disciplines. The initial sessions are suitable for students with little previous exposure to the subject.

MMED 8282. Neural Development and Neurodevelopmental Disorders. 3 Credits.

Basic concepts of neural development, especially of the cerebral cortex, and their relevance to understanding the pathophysiology of neurodevelopmental disorders.

MMED 8283. Current Topics in Neuroscience. 2 Credits.

MMED 8998. Advanced Reading and Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

MMED 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

MUSEUM STUDIES (MSTD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MSTD 6101. Museum Management. 3 Credits.

Overall operation of the museum: legal status of the museum and its obligations to the public; governance, staffing, policymaking as a nonprofit organization. Theory applied to practical situations. (Fall and spring).

MSTD 6102. NonProfit Fiscal Management. 3 Credits.

Basic concepts of general accounting; fund accounting for nonprofit organizations; budgets and budget systems; use of the budget as a management tool; long-range planning; income sources; other financial management concepts. (Spring).

MSTD 6103. Leading Change. 3 Credits.

Leadership challenges and styles as they relate to organizational change efforts. Case studies of museums undergoing change; best practices in leadership at all levels of the museum. (Spring, even years).

MSTD 6104. Managing People and Projects. 3 Credits.

Organizational development and modern management concepts as applied to museums. Managing people in the organization; the importance of project management systems to museum administration. (Fall).

MSTD 6201. Museum Collections. 3 Credits.

Establishing collections policies; laws, regulations, conventions, and codes that affect acquisitions, deaccessions, loans, and collection care; accountability; access problems. (Fall).

MSTD 6202. Museum Collections Management. 3 Credits.

The implementation of collections policies: establishing and managing collections, management procedures and systems, documentation of collections, records preservation, collections access and storage, handling, packing and shipping, and inventory control. (Spring).

MSTD 6203. Preventive Conservation Concepts. 3 Credits.

Historical development of preventive conservation in museums, conservation ethics, team approaches to conservation, interactions of various materials with agents of deterioration. Basics of materials testing, preparation of condition reports, choosing museum storage and exhibition materials, and risk assessment. Same as ANTH 6203 and AH 6286. (Fall and spring).

MSTD 6204. Preventive Conservation Techniques. 3 Credits.

Practical applications of preventive conservation of materials, monitoring environmental conditions, conducting risk assessments, evaluation of exhibit and storage areas; developing plans, policies, and procedures for collections care; grant proposal preparation for collections care initiatives. Same as ANTH 6204 and AH 6287. (Fall and spring).

MSTD 6301. Museum Exhibitions: Curatorial Research. 3 Credits.

Museum research from a curatorial point of view, with emphasis on exhibit theory and practice. Research techniques, information sources, and script production. (Fall).

MSTD 6302. Museum Exhibition Design. 3 Credits.

The processes of research, conceptualization, planning, and evaluation from a designer's point of view. Focus is on individual projects with some group collaboration. The designer's vocabulary, visual thinking, design documentation, and specifications. (Fall and spring).

MSTD 6303. Advanced Exhibition Design. 3 Credits.

The processes of research, conceptualization, planning, and evaluation from a designer's point of view. Focus is on individual projects with some group collaboration. The designer's vocabulary, visual thinking, design documentation, and specifications. (Spring).

MSTD 6304. Museum Exhibit Development. 3 Credits.

Research techniques; information sources; script production from a content perspective. (Spring).

MSTD 6305. Visitor Perspectives: Museum Evaluation in Exhibitions. 3 Credits.

Theory and practice of museum evaluation, especially as related to exhibition development. (Same as EDUC 6706) (Spring).

MSTD 6501. Museum Internship. 1-3 Credits.

Individual work experience in museums of the Washington area and possibly elsewhere. Each student should make arrangements with the Museum Studies Program staff. Museum internships are supervised by one or more members of the cooperating museum staff in the areas of museum management, object care and conservation, and exhibiting. (Fall, spring, and summer).

MSTD 6502. Directed Research. 3 Credits.

Individual research on special topics in the museum field. Topics must be approved by the director of the Museum Studies Program. May be repeated for credit.

MSTD 6601. Special Topics. 3 Credits.

May be repeated for credit provided the topic differs.

MSTD 6701. Museum Hist&Theory. 3 Credits.

Museums viewed from historical, philosophical, and practical perspectives. Examination and comparison of types of collecting organizations. Analysis of contemporary studies on the status of museums and their public programs. (Fall).

MSTD 6702. Museums & the Public: Exhibit. 3 Credits.

MUSIC (MUS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MUS 1000. Dean's Seminar. 3 Credits.

MUS 1051. Class Piano for Music Majors and Minors. 1 Credit.

Study of the rudiments of musical notation and piano playing in a small classroom setting. Open to majors and minors who need basic keyboard facility.

MUS 1052. Class Piano for Music Majors and Minors. 1 Credit.

Study of the rudiments of musical notation and piano playing in a small classroom setting. Open to majors and minors who need basic keyboard facility.

MUS 1061. Instrumental Ensemble. 1 Credit.

Chamber ensemble groups are approved by audition. Section numbers are .11 guitar ensemble, .12 percussion ensemble, .13 jazz combo, .14 keyboard ensemble, .15 string ensemble, .16 woodwind ensemble, .17 brass ensemble, .18 Baroque ensemble, .19 Latin band, .20 blues band.

MUS 1071. Jazz Band. 1 Credit.

Preparation and performance of classic and contemporary "big band" literature. Prerequisite: audition before director.

MUS 1081. Orchestra. 1 Credit.

Preparation and performance of orchestral literature. Prerequisite: audition before director.

MUS 1083. University Band. 1 Credit.

Section .10 is University Symphonic Band; Section .11 is University Wind Ensemble.

MUS 1091. University Singers. 1 Credit.

Preparation and performance of choral literature. Prerequisite: audition before director. Section .10 is University Singers; Section .11 is Chamber Choir.

MUS 1093. University Singers/Chamber Choir. 1 Credit.

Preparation and performance of choral literature. Section .10 is University Singers; Section .11 is Chamber Choir. Prerequisite: audition before director.

MUS 1095. Vocal Theater Workshop. 1 Credit.

Development of body awareness for the stage, acting improvisations, and character development. Scenes chosen from the opera, operetta, and musical theater repertoire. Musical coaching, use of makeup, and audition preparation.

MUS 1101. Elements of Music Theory. 2 Credits.

Notation, scales, keys, intervals, terms, rhythms, and chord structure and progression. Introduction to music literature, with emphasis on rudimentary aural analysis. (Fall and spring).

MUS 1102. Comprehensive Musicianship I. 3 Credits.

Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard. Prerequisite: MUS 1101, MUS 1051.

MUS 1103. Music in the Western World. 3 Credits.

Introductory history of musical styles, related to listening; study of music materials and media. Not open to music majors.

MUS 1104. Topics in Music. 3 Credits.

A rotating set of classes; topics may include: American music, a composer, the opera, and musical life in Washington, D.C. (Fall and spring).

MUS 1105. Introduction to Musical Thought and Practice. 3 Credits.

Introduction to concepts, methods, and practices that guide the study and performance of music. Old and new paradigms of musical thought are subject to discussion and critical investigation.

MUS 1107. Music of the World. 3 Credits.

Introduction to music in culture through comparative study of music from a variety of cultures worldwide.

MUS 1108. History of Jazz. 3 Credits.

Introduction to the styles, composers, and performers of jazz music from its origins to the present. (Spring).

MUS 1151. Conducting. 3 Credits.

Technique of conducting, score reading, rehearsal procedures, analysis, and interpretation of selected musical literature; practice in conducting. Prerequisite: MUS 2101.

MUS 1511. Piano. 1 Credit.

MUS 1512. Piano. 2 Credits.

MUS 1513. Voice. 1 Credit.

MUS 1514. Voice. 2 Credits.

MUS 1515. Organ. 1 Credit.

MUS 1516. Organ. 2 Credits.

MUS 1517. Classical Guitar. 1 Credit.

MUS 1518. Classical Guitar. 2 Credits.

MUS 1519. Violin. 1 Credit.

MUS 1520. Violin. 2 Credits.

MUS 1521. Viola. 1 Credit.

MUS 1522. Viola. 2 Credits.

MUS 1523. Cello. 1 Credit.

MUS 1524. Cello. 2 Credits.

MUS 1525. Bass. 1 Credit.

MUS 1526. Bass. 2 Credits.

MUS 1527. Flute. 1 Credit.

MUS 1528. Flute. 2 Credits.

MUS 1529. Recorder. 1 Credit.

MUS 1530. Recorder. 2 Credits.

MUS 1531. Oboe. 1 Credit.

MUS 1532. Oboe. 2 Credits.

MUS 1533. Clarinet. 1 Credit.

MUS 1534. Clarinet. 2 Credits.

MUS 1535. Saxophone. 1 Credit.

MUS 1536. Saxophone. 2 Credits.

MUS 1537. Bassoon. 1 Credit.

MUS 1538. Bassoon. 2 Credits.

MUS 1539. French Horn. 1 Credit.

MUS 1540. French Horn. 2 Credits.

MUS 1541. Trumpet. 1 Credit.

MUS 1542. Trumpet. 2 Credits.

MUS 1543. Trombone. 1 Credit.

MUS 1544. Trombone. 2 Credits.

MUS 1545. Tuba. 1 Credit.

MUS 1546. Tuba. 2 Credits.

MUS 1547. Harp. 1 Credit.

MUS 1548. Harp. 2 Credits.

MUS 1549. Percussion. 1 Credit.

MUS 1550. Percussion. 2 Credits.

MUS 1555. Lute. 1 Credit.

MUS 1556. Lute. 2 Credits.

MUS 1557. Harpsichord. 1 Credit.

MUS 1558. Harpsichord. 2 Credits.

MUS 1571. Jazz Perf. Tech. 1 Credit.

MUS 1572. Jazz Performance Techniques. 2 Credits.

MUS 2012. Piano. 2 Credits.
Prerequisite: Open by examination.

MUS 2014. Voice. 2 Credits.
Prerequisite: Open by examination.

MUS 2016. Organ. 2 Credits.
Prerequisite: Open by examination.

MUS 2018. Classical Guitar. 2 Credits.
Prerequisite: Open by examination.

MUS 2020. Violin. 2 Credits.
Prerequisite: Open by examination.

MUS 2022. Viola. 2 Credits.
Prerequisite: Open by examination.

MUS 2024. Cello. 2 Credits.
Prerequisite: Open by examination.

MUS 2026. Bass. 2 Credits.
Prerequisite: Open by examination.

MUS 2028. Flute. 2 Credits.
Prerequisite: Open by examination.

MUS 2030. Recorder. 2 Credits.
Prerequisite: Open by examination.

MUS 2032. Oboe. 2 Credits.
Prerequisite: Open by examination.

MUS 2034. Clarinet. 2 Credits.
Prerequisite: Open by examination.

MUS 2036. Saxophone. 2 Credits.
Prerequisite: Open by examination.

MUS 2038. Bassoon. 2 Credits.
Prerequisite: Open by examination.

MUS 2040. French Horn. 2 Credits.
Prerequisite: Open by examination.

MUS 2042. Trumpet. 2 Credits.
Prerequisite: Open by examination.

MUS 2044. Trombone. 2 Credits.
Prerequisite: Open by examination.

MUS 2046. Tuba. 2 Credits.
Prerequisite: Open by examination.

MUS 2048. Harp. 2 Credits.
Prerequisite: Open by examination.

MUS 2050. Percussion. 2 Credits.
Prerequisite: Open by examination.

MUS 2058. Harpsichord. 2 Credits.
Prerequisite: Open by examination.

MUS 2071. Jazz Performance Techniques. 1-3 Credits.

MUS 2072. Jazz Performance Techniques. 2 Credits.
Prerequisite: Open by examination.

MUS 2101. Harmony. 3 Credits.
Study of tonal harmonic practice from Baroque, Classical, Romantic, and 20th-century repertoires. Concurrent registration in the weekly keyboard lab is required.
Prerequisite: MUS 1102.

MUS 2102. Comprehensive Musicianship II. 3 Credits.
Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard.
Prerequisite: MUS 2101.

MUS 2105. Introduction to Ethnomusicology. 3 Credits.
Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Same as ANTH 2505.
Prerequisite: MUS 1101 or ANTH 1002 or ANTH 1004 or permission of instructor.

MUS 2105W. Introduction to Ethnomusicology. 3 Credits.
Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Same as ANTH 2505.
Prerequisite: MUS 1101 or ANTH 1002 or ANTH 1004 or permission of instructor.

MUS 2106. Music History III: 20th-Century Art Traditions. 3 Credits.
Western musical traditions and styles since Romanticism and approaches to music as art in contemporary society.
Prerequisite: MUS 1101.

MUS 2121. The Opera. 3 Credits.

History and styles of opera, analysis of representative works.

Prerequisite: MUS 2101 .

MUS 2122. Music in the US. 3 Credits.

History of music and musical life in the United States, emphasizing relationships among traditions of diverse origin.

Prerequisite: MUS 1101 or permission of instructor.

MUS 2122W. Music in the US. 3 Credits.

History of music and musical life in the United States, emphasizing relationships among traditions of diverse origin.

Prerequisite: MUS 1101 or permission of instructor.

MUS 2123. Musical Cultures of Black Americans. 3 Credits.

Musical genres and styles developed by African Americans since Reconstruction in their historical and cultural contexts.

Emphasis on black musical contributions to the cultural life of Washington, D.C.

MUS 2134. Composition. 3 Credits.

Introduction to 21st-century compositional practice; concepts of post-tonal analysis; emphasis on style studies and original student works. May be repeated for credit. Prerequisite: MUS 2101.

MUS 2140. Pedagogy. 3 Credits.

Principles, materials, and methods of teaching in selected areas. Prerequisite: permission of instructor.

MUS 2173. Comprehensive Musicianship for Jazz. 2 Credits.

Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard, with emphasis given to skills associated with jazz performance.

Prerequisite: MUS 1102.

MUS 2174. Introduction to Jazz Harmony. 3 Credits.

Analysis and composition of tunes in jazz/pop styles. Study of rhythmic characteristics, voice-leading, and chord/scale relationships within a jazz context. Prerequisite: MUS 1102.

MUS 2318. Orchestral Instrument. 2 Credits.

Prerequisite: Open by examination.

MUS 2661. Electronic and Computer Music I. 3 Credits.

Fundamental electronic and computer music concepts. Analog and digital sound synthesis techniques and theory, MIDI, studio recording techniques, signal processing, properties of sound, acoustics and psycho-acoustics, history and aesthetics. Laboratory fee.

MUS 2662. Electronic and Computer Music II. 3 Credits.

Continuation of MUS 2661. Fundamental electronic and computer music concepts. Analog and digital sound synthesis techniques and theory, MIDI, studio recording techniques, signal processing, properties of sound, acoustics and psycho-acoustics, history and aesthetics. Laboratory fee. MUS 2661 is prerequisite to MUS 2662.

MUS 3126. Music History I: Antiquity through Early Baroque. 3 Credits.

The development of Western European music from its earliest traceable roots to the end of the early, experimental Baroque period. Prerequisite: MUS 1102 and sophomore standing.

MUS 3127. Music History II: The Tonal Era. 3 Credits.

Styles, structures, social foundations and aesthetic change in European music of the late 17th through the late 19th centuries. Prerequisite: MUS 1102.

MUS 3127W. Music History II: Tonal Era. 3 Credits.

Styles, structures, social foundations and aesthetic change in European music of the late 17th through the late 19th centuries. Prerequisite: MUS 1102.

MUS 3139. Form and Analysis. 3 Credits.

Analysis of musical forms in representative musical literature.

Prerequisite: MUS 2101 .

MUS 3139W. Form and Analysis. 3 Credits.

Analysis of musical forms in representative musical literature. Prerequisite: MUS 2101 .

MUS 3174. Topics in Music Theory and Composition. 3 Credits.

A seminar on variable topics in the discipline of music theory, analysis, and composition. Topics may include analysis of post-tonal music, advanced jazz arranging, analysis of 14th-century vocal music, developments in extended instrumental techniques since 1950. Prerequisites depend on the topic; consult the department.

MUS 3175. Topics in Music History and Literature. 3 Credits.

A seminar on variable topics in music history and literature in all traditions and styles. Topics may include German musical Romanticism, introduction to critical musicology, the music of Josquin des Prez, and vernacular music in Washington, D.C. Prerequisites depend on the topic; consult the department.

MUS 3175W. Topics in Music History & Lit. 3 Credits.

A seminar on variable topics in music history and literature in all traditions and styles. Topics may include German musical Romanticism, introduction to critical musicology, the music of Josquin des Prez, and vernacular music in Washington, D.C. Prerequisites depend on the topic; consult the department.

MUS 4085. Advanced Performance Study. 3 Credits.

Prerequisite: Open by examination.

MUS 4184. Advanced Composition. 3 Credits.

Private instruction in composition in tutorial format.

Prerequisite: MUS 2134.

MUS 4198. Senior Seminar. 1 Credit.

Restricted to music majors in their final spring semester. Presentations of required senior projects in process; readings and discussion to place the projects in a broader musical and intellectual context. Corequisite: MUS 4199 or any upper-division private performance study course.

MUS 4199. Independent Research. 1-4 Credits.

Under the guidance of an assigned instructor. May be repeated for credit. Majors in their senior year take MUS 4198 as a corequisite.

MUS 4199W. Independent Research. 1-4 Credits.

Under the guidance of an assigned instructor. May be repeated for credit. Majors in their senior year take MUS 4198 as a corequisite.

NAVAL SCIENCE (NSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

NSC 1051. Introduction to Naval Science. 3 Credits.

Introduction to the naval profession and to concepts of sea power. The mission, organization, and warfare components of the U.S. Navy and Marine Corps. Overview of officer and enlisted ranks and rates, training and education, and career patterns. Naval courtesy and customs, military justice, leadership, and nomenclature. Professional competencies required to become a naval officer.

NSC 1052. Naval Ships Systems 1(Engng). 3 Credits.

A detailed study of ship characteristics and types, including ship design and control, propulsion, hydrodynamic forces, stability, compartmentation, and electrical and auxiliary systems. Included are basic concepts of the theory and design of steam, gas turbine, and nuclear propulsion.

NSC 2125. Naval Ships Systems 2(Weapons). 3 Credits.

Theory and employment of weapons systems, including the processes of detection, evaluation, threat analysis, weapon selection, delivery, guidance, and explosives. Fire control systems and major weapon types, including capabilities and limitations. Physical aspects of radar and underwater sound. Facets of command, control, and communications as means of weapons system integration.

NSC 2126. Sea Power and Maritime Affairs. 3 Credits.

A survey of the U.S. naval history. Naval aspects of U.S. conflicts from the American Revolution to the global war on terror. The influence of technological innovation, domestic politics, and foreign policy on the development and execution of naval doctrine and tactics.

NSC 2150. Navigation. 3 Credits.

Development of practical skills in naval piloting procedures. Charts, visual and electronic aids, and magnetic and gyro compasses; inland and international rules of the nautical road. The celestial coordinate system, including spherical trigonometry and how celestial information can be applied to navigation at sea. Environmental factors affecting naval operations.

NSC 2151. Naval Operations and Seamanship. 3 Credits.

Relative motion vector analysis theory, formation tactics, and ship employment; practical skills in relative motion problems. Controllable and noncontrollable forces in shiphandling, ship behavior, and maneuvering characteristics; various methods of visual communication, including flaghoist, flashing light, and semaphore.

NSC 2160. Evolution of Warfare. 3 Credits.

This course traces the development of warfare, from earliest recorded history to the present, with focus on the impact of major military theorists, strategists, tacticians, and technological developments. The student acquires a basic sense of strategy and develops an understanding of military alternatives and the impact of historical precedent on military thought and actions.

NSC 2175. Leadership & Management 1. 3 Credits.

Organizational behavior, management, and leadership principles in the context of naval organization. The management functions of planning, organizing, leading, and controlling; individual and group behavior in organizations; motivation and leadership. Decision making, communication, responsibility, authority, and accountability.

NSC 2180. Amphibious Warfare. 3 Credits.

A historical survey of the development of amphibious doctrine and the conduct of amphibious operations. The evolution of amphibious warfare in the 20th century, especially during World War II. Present-day potential and limitations on amphibious operations, including the concept of rapid deployment force.

NSC 4176. Leadership and Ethics. 3 Credits.

A capstone course that completes the NROTC preparations for midshipmen commissioning as Ensigns and Second Lieutenants. Application of Western moral traditions and ethical philosophy to issues involving military leadership, core values, the Uniform Code of Military Justice, and Navy regulations.

NSC 4176W. Leadership and Ethics. 3 Credits.

NURSING (NURS)

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

NURS 3101. Ethical Foundations of Nursing. 3 Credits.

NURS 3110. Transition: Nursing Profession. 2 Credits.

NURS 3111. Health Assessment: Foundations. 3 Credits.

NURS 3112. NPCR 1:Adult Med-Surg. 5 Credits.

NURS 3113. ClinSkillsLab:Adult Med-Surg 1. 6 Credits.

NURS 3114. NPCR 2: AdvancedAdult Med-Surg. 3 Credits.

NURS 3115. ClinSkillsLab:AdvAdultMedSurg2. 4 Credits.

NURS 3116. NCPR 3: Psych Mental Health. 3 Credits.

NURS 3117. NCPR: 4 Maternity/Women Hlth. 3 Credits.

NURS 3118. Pharmacology. 4 Credits.

NURS 4116. NPCR 5: Children & Families. 3 Credits.

NURS 4117. NPCR 6:Epidemiology&CommHealth. 3 Credits.

NURS 4119. PatientSafety&HlthCareQuality. 3 Credits.

NURS 4120. Capstone:Transitn to Practice. 6 Credits.

NURS 4121. Nursing Advancment Portfolio. 0 Credits.

NURS 6180. Dimensions of Prof. Nursing. 3 Credits.

NURS 6202. Concepts in Population Health. 3 Credits.

NURS 6203. Nursing Leadership. 3 Credits.

NURS 6204. Health Info and Technology. 3 Credits.

NURS 6205. HealthPolicy,Quality,Political. 3 Credits.

The health policy process and analysis relevant to the three main thrusts of policy: cost, quality and access. Political, social, economic, and population factors that influence this process. Comparisons to health systems in other countries as appropriate. Quality science and informatics in the context of interdisciplinary, coordinated, and ethical health care delivery.

NURS 6209. Transitional Care. 3 Credits.

Transitional care planning and implementation, including pertinent health care policy, transitional care models, inter-professional collaboration, quality outcomes, multifaceted interventions, and the patient engagement dynamics that influence patient-centered care transitions in the current health care environment. Recommended background: BSN. (Fall, spring, and summer).

NURS 6210. Building a Quality Culture. 3 Credits.

NURS 6211. Health Care Quality Landscape. 3 Credits.

NURS 6212. Quality Improvement Science. 3 Credits.

NURS 6213. Health Care Quality Analysis. 3 Credits.

NURS 6214. Patient Safety Systems. 3 Credits.

NURS 6220. Advanced Physiology and Pathophysiology. 3 Credits.

System-focused advanced physiology and pathophysiology for analysis of health deviations across the life span. Interpretation of changes in normal function that result in symptoms indicative of illness. This systematic assessment is foundational to clinical decision making and management of health deviations. (Fall, spring, and summer).

NURS 6222. Advanced Health Assessment and Diagnostic Reasoning. 4 Credits.

Nurse Practitioner and nurse-midwifery students will acquire the knowledge, skills and clinical foundation for advanced health assessment and diagnostic reasoning in the ambulatory health care setting. This course is a prerequisite to all other clinical courses and includes a fifteen-week online didactic course, a 75-hour clinical practicum and a three day, on-campus skills training session.

NURS 6224. Adult/Gerontology Primary Care Nurse Practitioner 1, Practice Introduction. 8 Credits.

NURS 6225. Adult/Gerontology Primary Care Nurse Practitioner 2, Adolescent & Adult. 8 Credits.

NURS 6226. Primary Care of the Family. 5 Credits.

NURS 6227. FNP Clinical Practicum. 1-7 Credits.

NURS 6228. Advanced Family Primary Care. 5 Credits.

NURS 6229. Adult/Gerontology Primary Care Nurse Practitioner 3, Adult, Older/Frail. 4 Credits.

NURS 6230. Family Nurse Practitioner 1, Lifespan Primary Care/Diagnosis/Managemen. 8 Credits.

NURS 6231. Family Nurse Practitioner 2, Lifespan Primary Care/Diagnosis/Management. 8 Credits.

NURS 6232. Family Nurse Practitioner 3, Professional Issues/Diagnosis/Management. 4 Credits.

Seminar and clinical practicum that focuses on professional issues for Family Nurse Practitioners (FNPs). Role development, certification, ethical issues in practice, interprofessional collaboration, and health-care reimbursement issues are discussed and related to current clinical experiences. Clinical Skills Modules to help FNPs interpret EKGs and Chest X-Rays are included.

NURS 6233. Genetics for HC Providers. 3 Credits.

NURS 6234. Advanced Pharm for Nursing. 3 Credits.

This course will cover an introduction to pharmacotherapeutics as it primarily applied to Advanced practice Nurses in Primary Care settings. The course will briefly review key pathophysiologic points, and then will discuss the pharmacotherapeutic interventions that may be considered in the treatment of disease. The course will begin with a general introduction to the foundations for professional practice and the concepts of pharmacoeconomics, pharmacokinetics, pharmacodynamics, and pharmacogenetics will be introduced. Issues surrounding community practices in pharmacotherapeutics will be explored. The course will then focus on pharmacological interventions in the spectrum of disease states seen in primary care practices involving the Nervous system, Immune System, Cardiovascular system, Hematologic system, Genitourinary system, Gastrointestinal system, Respiratory system, Endocrine system, Sensory systems, and the Skin.

NURS 6239. Bridge to Nurse Midwifery. 1 Credit.**NURS 6241. The Health Care Enterprise. 3 Credits.****NURS 6256. Intro to Palliative Care. 3 Credits.****NURS 6258. Leadership Capstone Pract I. 3 Credits.**

Nursing 6258 is the first of a two-semester capstone course designed to provide a mentored practicum that offers the opportunity to apply leadership content and refine leadership abilities in a setting and practice area mutually agreed upon by the student and course faculty.

NURS 6259. Leadership Capstone Pract II. 3 Credits.

Nursing 6259 is a continuation of NURS 6258 and is designed to provide a mentored internship practicum, the opportunity to apply leadership content, and refine leadership abilities.

NURS 6260. Coaching I-Foundations. 3 Credits.

Nurse coaching methodology and competencies. Leadership and therapeutic relationship skills. Nurse coaching requires willingness to model self-development and full presence with others. The theory and meta-science fundamental to each coaching skill will be integrated. Foundational skills will include assessing readiness for change, building trust and warmth, obtaining and holding the clients agenda, visioning, raising awareness techniques, brainstorming, and goal setting.

NURS 6261. Coaching II-Adv Coaching. 3 Credits.

This course builds on Coaching I and explores the multidisciplinary and nursing theories foundational to nurse coaching. It will investigate advanced coaching techniques as well as common coaching topics and contexts such as weight loss, stress and time management, and executive coaching. These coaching skills build on the methodology and techniques learned in Coaching I.

NURS 6262. Coaching III, Leadership. 3 Credits.

This course introduces the theoretical foundation and evidence for leadership and coaching in nursing. Different applications are explored including executive coaching, team coaching, peer coaching and personal career coaching. Multiple models, for nurse leadership coaching are investigated through learning activities and live demonstration with colleagues. A complete evidence-based coaching strategy is created for a given case study.

NURS 6270. Resear Meth Hlth Prof. 3 Credits.**NURS 6271. Resear Meth Hlth Prof II. 3 Credits.****NURS 6272. HumanResrcDev/HlthProfPractice. 3 Credits.****NURS 6273. Health Info Quality & Outcomes. 3 Credits.****NURS 6274. Health Economics & Finance. 3 Credits.****NURS 6275. Leadership &Change/Health Care. 3 Credits.****NURS 6276. Foundations of Palliative Care. 3 Credits.****NURS 6277. Pain and Suffering. 3 Credits.****NURS 6278. PalliativeCare:Chronic Illness. 3 Credits.****NURS 6279. Palliative Care Practicum I. 1-4 Credits.****NURS 6280. Palliative Care Practicum II. 1-4 Credits.****NURS 6281. PC Leadership and Management. 2 Credits.****NURS 6291. AdvTopics. 1-9 Credits.****NURS 6292. Teachw/Tech.inHealthProfession. 3 Credits.****NURS 6293. Health Ed.for Indiv&Community. 3 Credits.****NURS 6294. SpirtlBelief&Pract/HlthCare. 3 Credits.****NURS 6295. Health Care Quality Process. 3 Credits.****NURS 6296. Ped Health Assess & Pharm. 1 Credit.****NURS 6297. Independent Study. 1-9 Credits.****NURS 6298. NP Clinical Completion. 1-5 Credits.****NURS 8401. Org Concepts in Nursing. 3 Credits.****NURS 8402. Knowledge Managemnt in Nursing. 3 Credits.****NURS 8403. Translating Research into Prac. 3 Credits.****NURS 8404. Research & Policy for Nursing. 3 Credits.****NURS 8405. Healthcare Quality Improvement. 3 Credits.****NURS 8406. Field Exp Adv Nursing Practice. 3 Credits.****NURS 8407. Grant Writing. 3 Credits.****NURS 8408. Topics Pharmacology. 3 Credits.****NURS 8409. HCQ Practicum. 3 Credits.****NURS 8410. Executive Presence I. 2 Credits.**

NURS 8411. Executive Presence II. 2 Credits.

This is a continuation of Executive Presence I. In this course, the student will examine power shifts in leadership, revisit change as a stimulus for innovation, participate in an interactive session for individuals who can practice communicating their practicum proposals and receiving friendly feedback and constructive input from their peers, and re-evaluate the leadership development plan designed in Executive Presence I.

NURS 8412. HC Finance for Nurse Leaders. 3 Credits.**NURS 8414. DNP Residency. 3 Credits.****NURS 8498. Research Project Proposal. 3 Credits.****NURS 8499. Clinical Research Project. 3 Credits.**

ORGANIZATIONAL SCIENCES (ORSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ORSC 1000. Dean's Seminar. 3 Credits.**ORSC 1046. Membership in Global Organizations. 3 Credits.**

The globalization of organizations has been the engine for the global movement of talented and skilled professionals, and organizations increasingly focus on the ability to attract, utilize, and develop globally mobile talent. Issues related to the formulation of global strategy and the leadership of global talent.

ORSC 1109. Introduction to Organization and Social Systems Sciences. 3 Credits.

The evolution of organizations in terms of social context and the present-day systems environment. Emerging roles of leadership, communication, and employer–employee relationships. Organizational models are used to develop strategic thinking about career and life roles.

ORSC 2116. Leading Change. 3 Credits.

An in-depth introduction to and analysis of concepts and techniques of leadership, including motivation, goal alignment, incentives, teamwork, and communication. Conceptual and empirical background of the management of change.

ORSC 2123. Negotiation and Conflict Resolution. 3 Credits.

Theories in psychology, management, and communication as applied to individual-, group-, and organizational-level contexts of negotiation and conflict resolution.

ORSC 2143. Leadership and Performance. 3 Credits.

Leadership from an organization system perspective. Theory, research, and applications pertaining to how leaders can reduce uncertainty through appropriate adaptive change.

ORSC 3141. Strategy in Organizations. 3 Credits.

Processes and theories of strategic management in the profit and nonprofit sectors. Analysis of behavioral, sociopolitical, and economic forces underlying strategy formulation. Strategic competitive advantage; corporate diversification; multinational corporations; evaluation and choice; and implementation of functional and corporate strategies.

ORSC 3159. Extreme Decisions. 3 Credits.

Processes in organizational decision making and group behavior. Topics include group and individual decision-making approaches, decision aids and support systems, performance and decision effectiveness, and risk analysis.

ORSC 3165. Organizational Network Analysis. 3 Credits.

A relational view of organizations, emphasizing the ways in which business, non-profit, public, and governmental entities engage with a multitude of actors in pursuit of their goals. Organizational embeddedness and how an organization's position in a web of relations helps or hinders it.

ORSC 3190. Special Topics. 1-3 Credits.

Topics to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ORSC 4161. Research Methods in Organizational Sciences. 3 Credits.

Fundamentals of qualitative, correlational, quasi-experimental, and experimental research design in organizational settings. Defining a research question, designing a research study, conducting and interpreting statistical analyses, and communicating results of a variety of research efforts. Prerequisite: STAT 1053.

ORSC 4195. Independent Study. 1-3 Credits.

Opportunity for work on individual research projects. Open to qualified students by permission; arrangements must be made with the sponsoring faculty member prior to registration. A list of participating faculty members and their research specialties is available from the department.

ORSC 4197. Senior Research Seminar. 3 Credits.

Capstone course limited to organizational sciences majors in their senior year. Each student works on an individually designed, organizationally oriented research project, with results presented in a major paper. Prerequisite: ORSC 4161.

ORSC 4197W. Senior Research Seminar. 3 Credits.**ORSC 6209. Management Systems. 3 Credits.**

An overview of theoretical frameworks, evolution, concepts, and methods of complex organizational systems. Modern organization theory using systems thinking and concepts. Organizational and management systems paradigm shifts. Problem solving and decision making, stakeholder theory, organizational environments, organizational effectiveness.

ORSC 6212. Current Issues in Personnel Testing and Selection. 3 Credits.

Psychometric, legal, and organizational issues in personnel employment testing and selection, reliability and validity of selection instruments, and the utility of selection systems. The legal environment, including test fairness in selection, adverse impact, and statistical models of test fairness and specific selection techniques. Prerequisite: STAT 2104.

ORSC 6214. Personnel Training and Performance Appraisal Systems. 3 Credits.

Management training programs and training evaluation techniques. Performance appraisal techniques, appraisal systems, relationship of rewards to performance and the appraisal interview. Training and rating systems that satisfy legal requirements and stimulate employee productivity.

ORSC 6216. Theories and Management of Planned Change. 3 Credits.

A systems view of organizational change and development, including intervention strategies, data collection, diagnosis, and the integration and management of system-wide organizational change.

ORSC 6217. Productivity and Human Performance. 3 Credits.

Definitions and measurement of individual, team, and organizational productivity, effectiveness, and efficiency. Models for the analysis of organizational and individual productivity and productivity growth in industrialized nations. Techniques for increasing productivity.

ORSC 6222. Theory and Practice of Compensation Management. 3 Credits.

Analysis of contemporary compensation systems from both theoretical and practical perspectives, including the latest decisions of courts and regulatory agencies. Examination of motivational theories of pay, determinants and effects of salary structures on performance, incentive plans, performance-based compensation, and managerial compensation systems.

ORSC 6223. Collective Bargaining. 3 Credits.

Analysis of federal and state employee relations laws and regulations. Topics include the bargaining environment, wage and benefit issues in arbitration, arbitration of grievances, employee relations in non-union organizations, and behavioral theories of labor negotiations.

ORSC 6224. Persuasion & Negotiation. 3 Credits.

Theories drawn from the psychology, management, and communication literature pertaining to core concepts of social influence, persuasion, and negotiation. Critical assessment of proposals within organizations that use these strategies.

ORSC 6241. Strategic Management and Policy Formation. 3 Credits.

Processes and theories of strategic management in the profit and not-for-profit sectors. Analysis of behavioral, sociopolitical, and economic forces underlying strategy formulation. Issues of strategic competitive advantage; corporate diversification; multinational corporations; evaluation and choice; and implementation of functional and corporate strategies.

ORSC 6242. Organizational Communication and Conflict Management. 3 Credits.

Theories drawn from the communication psychology and management literature pertaining to core concepts of social influence, persuasion, and negotiation. Critical assessment of proposals within organizations that use these strategies.

ORSC 6243. Sem:Leadership-Complex Organznt. 3 Credits.

The view of leadership taken in this seminar extends theories beyond the interpersonal, near-immediate time frame toward an organizational perspective in which cause-and-effect linkages are traced. The leadership role as an attribute of a system. How effective leaders reduce uncertainty through appropriate adaptive change.

ORSC 6246. Comparative Management. 3 Credits.

International dimensions of management over a broad spectrum of topics, including cross-national transfer and management practices in a global economy; cross-cultural interaction; business-government relations; expatriation and repatriation processes; international strategic management; technology transfer; globalization of human resources management.

ORSC 6248. Strategic Human Resource Planning. 3 Credits.

Overview of the principles of human resource planning. Model for determining human resource requirements, including forecasting, goal setting, human resource auditing, and environmental scanning. Analysis of the interfaces between human resource planning and personnel selection, job design, training, compensation, and related functions.

ORSC 6250. Leadership Coaching: Principles and Practices. 3 Credits.

An introduction to leadership coaching, including behavioral sciences roots: communication and conflict resolution skills, motivation, personality and performance assessments. Coaching vs. related practice areas; business coaching vs. personal coaching. Professional and ethical standards.

ORSC 6251. Team Coaching and Facilitation. 3 Credits.

Application of the fundamentals and governing values of leadership coaching to the development of productive work groups and communities. The art and practice of facilitation as applied to team learning and the encouragement of breakthrough thinking and team problem solving. Prerequisite: ORSC 6242, ORSC 6250.

ORSC 6261. Research Methods in Org Scienc. 3 Credits.

Fundamentals of qualitative, correlational, quasi-experimental, and experimental research designs. Defining a research question, designing a research study, conducting and interpreting statistical analyses, and communicating research results.

ORSC 6262. Action Research. 3 Credits.

A qualitative approach to action research problems. Students work with a client on an action research project and produce a research report.

ORSC 6295. Directed Research. 1-12 Credits.

Supervised research in selected fields within organizational sciences. Admission by prior permission of faculty advisor and instructor.

ORSC 6297. Special Topics. 3 Credits.

Special topics in human resource strategic planning, computer-based learning, human-computer interaction, management information technology, knowledge management, coaching, and organizational design.

ORSC 6298. Directed Readings. 1-12 Credits.

Supervised readings in selected fields within organizational sciences. Admission by prior permission of faculty advisor and instructor.

ORSC 8261. Research Methods in Organizational Sciences. 3 Credits.

PARALEGAL STUDIES (PSLX)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSLX 6210. American Jurisprudence. 3 Credits.**PSLX 6211. Legal Research and Writing. 3 Credits.****PSLX 6212. Litigation. 3 Credits.****PSLX 6213. Corporations and Contracts Law. 3 Credits.****PSLX 6214. Administrative Law. 3 Credits.****PSLX 6215. Government Contracts Law. 3 Credits.****PSLX 6216. Elements of Intellectual Property Law. 3 Credits.****PSLX 6217. Prosecution and Litigation in Intellectual Law Practice. 3 Credits.****PSLX 6218. International Trade and Finance. 3 Credits.****PSLX 6219. International Litigation. 3 Credits.****PSLX 6221. Tanzanian Legal System. 3 Credits.****PSLX 6222. Tanzanian Community Law. 3 Credits.****PSLX 6223. Contracts. 3 Credits.**

Contract elements, their attendant legal ramifications, and the processes necessary to make such determinations. Development of legal reasoning skills in evaluating issues arising from contract law. (Fall).

PSLX 6224. Advanced Legal Writing. 3 Credits.

Advanced legal writing techniques and drafting for legal practice. Legal writing in plain English; strategies for effective writing; emphasis on legal memoranda, legal correspondence, and preparing and drafting legal pleadings and documents for court. Refines and advances skills in written legal analysis and legal citation. (Spring).

PSLX 6225. Business Entities. 3 Credits.

Overview of business organizations, including partnerships, limited liability companies, and corporations. Key concepts applicable to business organizations, including regulation, business formation, document preparation. Application of legal analysis within the context of business entities and other topics applicable to paralegals in all disciplines. (Spring).

PSLX 6226. International Law. 3 Credits.

Introduction and survey of international law, including international trade law and litigation. Rules and principles governing relations among sovereign states, international organizations, and sources of international law. Analysis of the rules and customs for handling international trade. International courts and tribunals; overview of the treaties, customary principles, and institutional structures governing international human rights law. (Fall, spring, and summer).

PSLX 6227. Intellectual Property Law. 3 Credits.

Introduction to the legal structure of an intellectual property practice. Trademarks, copyrights, and patents and the supporting practice concomitant to each element. Analysis of the processes, supporting documentation, laws, and rules regarding patent prosecution and litigation. This course complements and builds upon the legal issues and analysis introduced in the courses on contracts, business entities, and litigation. (Fall, spring, and summer).

PATENT PRACTICE (PATN)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PATN 6201. The American Legal System. 3 Credits.

PATN 6202. Legal Research. 3 Credits.

PATN 6203. Patent Processes and Policies. 3 Credits.

PATN 6204. The IP Ecosystem. 3 Credits.

PATN 6205. Patent Practice and Procedure. 3 Credits.

PATN 6206. Advanced Patent Practice. 3 Credits.

PATN 6207. Patent Decisions. 3 Credits.

PEACE STUDIES (PSTD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSTD 1010. Introduction to Peace Studies and Conflict Resolution. 3 Credits.

Major thinkers and themes in the field of peace studies and conflict resolution. Focus on philosophical and religious foundations of peace and justice movements in the 20th century. Examination of peace and conflict through an interdisciplinary lens and on personal, local, and international levels.

PSTD 3190. Peace Studies Seminar. 3 Credits.

Capstone seminar for peace studies minors in their junior or senior year. Taken concurrently with a relevant internship or as part of a long-term research project to probe the relationship between peace studies and conflict resolution in practice and in theory.

PSTD 3191. Special Topics Peace Studies. 1-3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

PERSIAN (PERS)

Explanation of Course Numbers

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PERS 1001. Beginning Persian I. 0-4 Credits.

Fundamentals of speaking, understanding, reading, and writing of Modern Standard Persian. Laboratory fee.

PERS 1002. Beginning Persian II. 0-4 Credits.

Continuation of PERS 1001. Fundamentals of speaking, understanding, reading, and writing of Modern Standard Persian. Laboratory fee.

PERS 2001. Intermediate Persian I. 4 Credits.

Continuation of PERS 1001- PERS 1002. Further development of speaking, understanding, reading, and writing skills of Modern Standard Persian. Prerequisite: PERS 1001- PERS 1002 . Laboratory fee.

PERS 2002. Intermediate Persian II. 4 Credits.

Continuation of PERS 2001. Further development of speaking, understanding, reading, and writing skills of Modern Standard Persian. Prerequisite: PERS 1001- PERS 1002 . Laboratory fee.

PERS 3001. Advanced Persian. 3 Credits.

Development of writing, reading, speaking, and listening skills at the advanced level of proficiency. Prerequisite: PERS 2001- PERS 2002 . Laboratory fee.

PERS 3002. Media Persian. 3 Credits.

Introduction to Persian journalistic style through a variety of media sources, such as print, Internet, radio, and television. Critical analysis of authentic news and proficiency-oriented projects.

PHARMACOGENOMICS (PHRG)

Explanation of Course Numbers

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PHRG 2141. Mol. Bio for Pharmacogenomics. 4 Credits.

PHRG 2142. Mol. Tech for Pharmacogenomics. 2 Credits.

PHRG 4151. Intro to Pharmacy Practice Lab. 1 Credit.

PHRG 4152. Pharmaceutics I. 2 Credits.

PHRG 4153. Pharmaceutics II. 5 Credits.

PHRG 4154. Integrated Basic Health Sciences I. 3 Credits.

PHRG 4155. IntegratedBasicHlthSciences II. 3 Credits.

PHRG 4156. IntegratdBasicHlthSciences III. 3 Credits.

PHRG 4157. IntegratedBasicHlthSciences IV. 3 Credits.

PHRG 4160. IntegratedBasicHlthSci Lab I. 1 Credit.

PHRG 4161. IntegratedBasicHlthSciLab II. 1 Credit.

PHRG 4163. Pharmacogenomics Essentials. 2 Credits.

PHRG 4165. Patient Counseling and Comm. 2 Credits.

PHRG 4167. Intro. Pharm. Pract. Exp. I. 2 Credits.

PHRG 4168. Intro. Pharm. Pract. Exp. II. 2 Credits.

PHRG 4169. Nonprescription Products. 3 Credits.

PHRG 4170. Out. Pharm. Prac. Lab. 1 Credit.

PHRG 4171. Sterile Compounding Lab. 1 Credit.

PHRG 4172. Clin. Drug Info. Skills. 1 Credit.

PHARMACOLOGY (PHAR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHAR 3170. Intro- Pharmacology/Toxicology. 3 Credits.

PHAR 3190. Prin of Molecular Medicine. 3 Credits.

PHAR 6201. Pharmacology. 5 Credits.

Required for second-year medical students. Lectures, laboratory, and conferences on interaction of drugs and biological systems as a basis for rational disease therapy. Prerequisite: Bioc 201; Phyl 201, 212.

PHAR 6202. Pharmacology. 1-5 Credits.

Required for second-year medical students. Lectures, laboratory, and conferences on interaction of drugs and biological systems as a basis for rational disease therapy. Prerequisite: Bioc 201; Phyl 201, 212.

PHAR 6205. Pharmacology. 3 Credits.

Basic principles of pharmacology, including receptor mechanisms, drug distribution and metabolism, and pharmacokinetics. Lectures, laboratories, and tutorials on the interactions of drugs and biological systems as a basis for rational disease therapy. Prerequisite: BmSc 8210, 8212; or permission of instructor. (Fall).

PHAR 6206. Advanced Pharmacology. 3 Credits.

Lectures on the interactions of drugs and specific organ systems. Tutorials on current research in pharmacology and toxicology. Prerequisite: Phar 6205. (Spring).

PHAR 6207. Basic Principles of Pharmacol.. 2 Credits.

Drug disposition. Autonomic nervous system, cardiovascular and gastrointestinal drugs. Psychopharmacology. Analgesics, sedatives, anticonvulsants. Chemotherapy, toxicology, endocrinology.

PHAR 6208. Pharm in Dis. Pathophysiology. 2 Credits.

The pharmacology of disease management.

PHAR 6501. Readings in Pharmacology. 1-12 Credits.

Readings, discussions, and/or preparation of report. Student can choose to work with one or more faculty members in the department on a topic of mutual interest.

PHAR 6502. Clinical Use of Drugs. 3 Credits.

Discussion of the rational use of drugs in the treatment of disease. Independent reading and study.

PHAR 8800. Summer Remedial Pharmacology 1. 6 Credits.

PHAR 8801. Summer Remedial Pharmacology 2. 2 Credits.

PHILOSOPHY (PHIL)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHIL 1000. Dean's Seminar. 3 Credits.

PHIL 1051. Introduction to Philosophy. 3 Credits.

Readings from major philosophers and study of their positions on the most basic questions of human life. Topics include such issues as: What is justice? What is knowledge? What is reality? Does God exist? What is the mind? Do humans have free will?.

PHIL 1062. Philosophy and Film. 3 Credits.

Philosophical problems and theories of perception, meaning, personal identity, and moral agency and their illustration in the context of cinema. Cinema and its derivatives (TV, video) as prime routes to experience of the natural and social worlds in an age of communication. Readings in classical and contemporary philosophy and in film theory; screening of a series of films.

PHIL 1153. The Meaning of Mind. 3 Credits.

The nature of the human mind is one of the oldest questions of philosophy. Students with no background in philosophy or the sciences of the mind are introduced to the central questions, assumptions, and hypotheses about the human mind. (Fall and spring).

PHIL 1193. Introduction to Existentialism. 3 Credits.

The philosophical themes of selfhood, mortality, authenticity, and ethical responsibility from an existentialist perspective, including the writings of Kierkegaard, Heidegger, Nietzsche, Camus, and Sartre. The place of existentialism in the history of philosophy.

PHIL 2045. Introduction to Logic. 3 Credits.

Introduction to informal logic, scientific argument, and formal logic. The informal logic component focuses on fallacies of reasoning and practical applications of logic. The formal logic component focuses on translation from English into propositional logic, truth tables, and proofs in propositional logic.

PHIL 2111. History of Ancient Philosophy. 3 Credits.

History of Western philosophy from the Pre-Socratics to the Stoics (6th century BCE to 1st century CE). Major emphasis on the writings of Plato and Aristotle. Among themes to be covered: knowledge and reality, political and moral philosophy.

PHIL 2111W. History of Ancient Philosophy. 3 Credits.

History of Western philosophy from the Pre-Socratics to the Stoics (6th century BCE to 1st century CE). Major emphasis on the writings of Plato and Aristotle. Among themes to be covered: knowledge and reality, political and moral philosophy.

PHIL 2112. History of Modern Philosophy. 3 Credits.

History of Western philosophy of the 16th through 18th centuries; Continental Rationalism and British Empiricism from the scientific revolution through the Enlightenment; major emphasis on Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant. Prerequisite: PHIL 1051 .

PHIL 2124. Philosophies of Disability. 3 Credits.

Disability presents an intense and interesting challenge to traditional philosophical presuppositions and principles. This course examines various philosophical approaches to disability—historical, individual, and medical paradigms as well as those that rely on frameworks of social or human rights. (Fall).

PHIL 2124W. Philosophies of Disability. 3 Credits.

Disability presents an intense and interesting challenge to traditional philosophical presuppositions and principles. This course examines various philosophical approaches to disability—historical, individual, and medical paradigms as well as those that rely on frameworks of social or human rights.

PHIL 2125. Philosophy of Race and Gender. 3 Credits.

A theoretical examination of the bodily, social, discursive, and political effects of patriarchy, racism, and classism. (Fall and spring).

PHIL 2125W. Philosophy of Race and Gender. 3 Credits.

A theoretical examination of the bodily, social, discursive, and political effects of patriarchy, racism, and classism. (Fall and spring).

PHIL 2131. Ethics: Theory and Applications. 3 Credits.

Examination of leading ethical theories (e.g., utilitarianism, deontology, virtue ethics), and methodology in ethics. Engagement with contemporary problems. (Fall and spring).

PHIL 2132. Social and Political Philosophy. 3 Credits.

Philosophical theories about how economic, political, legal, and cultural institutions should be arranged. Topics include the meaning and significance of liberty, the legitimate functions of government, the nature of rights, the moral significance of social inequality, and the meaning of democracy.

PHIL 2132W. Social and Political Philosophy. 3 Credits.

Philosophical theories about how economic, political, legal, and cultural institutions should be arranged. Topics include the meaning and significance of liberty, the legitimate functions of government, the nature of rights, the moral significance of social inequality, and the meaning of democracy.

PHIL 2133. Philosophy and Nonviolence. 3 Credits.

Violence and nonviolence in the personal and social struggle for meaningful, just, and peaceful existence; philosophical foundations of pacifism and nonviolent resistance in the thought of Tolstoy, Gandhi, King, and others; philosophical inquiry into war, terrorism, genocide, and ethnic conflict, as well as human rights, humanitarian intervention, and just war theory. (Spring).

PHIL 2134. Philosophy of Human Rights. 3 Credits.

Conceptual, ethical, and theoretical analyses of human rights with emphasis on the justification of human rights, the debate over cultural relativism, and the application of human rights norms in domestic and global contexts. (Fall).

PHIL 2135. Ethics in Business and the Professions. 3 Credits.

Ethical theories and basic concepts for analysis of moral issues arising in business and in professional practice. (Fall and spring).

PHIL 2136. Contemporary Issues in Ethics. 3 Credits.

Introduction to a range of debates in applied ethics, including both classic debates concerning topics such as the permissibility of abortion, animal treatment, and suicide as well as more current debates concerning our interactions with the environment and our obligations to the poor in a global context. (Fall).

PHIL 2281. Philosophy of the Environment. 3 Credits.

Three models of environmental sustainability: the current paradigm in economic and cultural thinking (neoclassical economics); redistribution of resources toward greater global equity (a macroeconomic perspective); and de-growth in the developed economies (ecological economics). The models offer different perspectives on what environmental sustainability means and how it can impact the cultural, religious, moral, metaphysical, and existential situation.

PHIL 3100. Selected Topics. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. (Fall and spring).

PHIL 3100W. Selected Topics. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. (Fall and spring).

PHIL 3113. 19th-Century Philosophy. 3 Credits.

European philosophy of the 19th century, with major emphasis on Kant, Hegel, Schopenhauer, Kierkegaard, and Nietzsche.

Prerequisite: PHIL 1051 .

PHIL 3121. Symbolic Logic. 3 Credits.

Analysis and assessment of deductive arguments, using propositional, predicate, and other logics; philosophical basis and implications of logical analysis; metatheory of logic; modal and non-standard logics. Prerequisite: Phil 1045 or permission of instructor.

PHIL 3142. Philosophy of Law. 3 Credits.

Systematic examination of fundamental concepts of law and jurisprudence; special emphasis on the relationship between law and morality. (Fall).

PHIL 3142W. Philosophy of Law. 3 Credits.

Systematic examination of fundamental concepts of law and jurisprudence; special emphasis on the relationship between law and morality.

PHIL 3151. Philosophy and Science. 3 Credits.

Analysis of the structure and meaning of science, including scientific progress and theory change, objectivity in science, the drive for a unified science, and ways science relates to everyday understandings of the world. Attention given to various sciences, including physics, biology, and neuroscience. Prerequisite: PHIL 1051 or a 2000-level philosophy course.

PHIL 3151W. Philosophy and Science. 3 Credits.

Analysis of the structure and meaning of science, including scientific progress and theory change, objectivity in science, the drive for a unified science, and ways science relates to everyday understandings of the world. Attention given to various sciences, including physics, biology, and neuroscience. Prerequisite: PHIL 1051 or two semesters of college-level science.

PHIL 3152. Theory of Knowledge. 3 Credits.

Inquiry into the basis and structure of knowledge, the problems of skepticism and justification, the relations between subjectivity and objectivity, and the contributions of reason, sense experience, and language. Prerequisite: PHIL 1051 ; PHIL 2112 also recommended.

PHIL 3153. Mind, Brain, and Artificial Intelligence. 3 Credits.

Investigation of the nature of mind from a variety of perspectives, including neuroscience, cognitive psychology, and artificial intelligence, as well as traditional philosophy of mind. Possible additional topics include consciousness, mental disorders, animal minds, and the nature and meaning of dreams. Prerequisites: PHIL 1051 or PHIL 1153 or PHIL 2112 or permission of the instructor. (Spring).

PHIL 3161. Philosophy and Literature. 3 Credits.

Critical investigation of the sociopolitical commitments that inform the practices of reading and writing as discussed by Sartre, Barthes, Foucault, and others. Focus on the development of existentialist themes, including authenticity, freedom, temporality, and death in the work of Kafka, Tolstoy, Mann, Woolf, and others. (Fall, alternate years).

PHIL 3162. Aesthetics. 3 Credits.

The problem of artistic representation and the nature of aesthetic experience as related to the creation, appreciation, and criticism of art. Special emphasis on nonrepresentational works of art and their interpretation. Prerequisite: PHIL 1051 or PHIL 2111 or PHIL 2112 or PHIL 3113.

PHIL 3162W. Aesthetics. 3 Credits.

The problem of artistic representation and the nature of aesthetic experience as related to the creation, appreciation, and criticism of art. Special emphasis on nonrepresentational works of art and their interpretation. Prerequisite: PHIL 1051 or PHIL 2111 or PHIL 2112 or PHIL 3113.

PHIL 3172. American Philosophy. 3 Credits.

A survey of American philosophical thought, focusing on the late 19th through mid-20th centuries. Covers American Pragmatism (Peirce, James, Dewey) in depth; other authors may include Thoreau, Emerson, Royce, Santayana, Mead, Quine, and Rorty.

PHIL 3251. Philosophy of Biology. 3 Credits.

An introduction to conceptual and methodological issues raised by contemporary biology, including teleology, reductionism, units of selection, the structure of evolutionary theory, genetics, taxonomy, and the nature of scientific explanation. Other issues may include the nature-nurture debate, creationism/intelligent design, the evolution of altruism, and the relevance of evolutionary theory to ethical questions.

PHIL 4192. Analytical Philosophy. 3 Credits.

The dominant movements of 20th-century Anglo-American philosophy, including logical positivism, British ordinary language philosophy, and neopragmatism, as represented by Russell, G.E. Moore, Wittgenstein, Ayer, Quine, Kripke, et al. Prerequisite: one other upper-division philosophy course (PHIL 2112 and PHIL 3121 recommended).

PHIL 4193. Phenomenology and Hermeneutics. 3 Credits.

An intensive, systematic introduction to the phenomenological and hermeneutic traditions in philosophy through some of their best-known representatives: Husserl, Heidegger, Gadamer, Sartre, Beauvoir, and Merleau-Ponty. Central topics of discussion include consciousness, anguish/anxiety, discourse, interpretation, the Other, death, and ambiguity. Prerequisite: PHIL 2112 or PHIL 3113.

PHIL 4195. Topics in Value Theory. 3 Credits.

Variable topics in ethics, political philosophy, aesthetics, and other subfields in normative philosophy. Prerequisite: one upper-division course on related subject matter or permission of the instructor.

PHIL 4195W. Topics in Value Theory. 3 Credits.**PHIL 4196. Topics in Theory of Knowledge. 3 Credits.**

Variable topics in epistemology, philosophy of science and mathematics, philosophy of mind, and similar subfields. Prerequisite: one upper-division course on related subject matter or permission of the instructor.

PHIL 4198. Proseminar. 3 Credits.

Variable topics; preparation and presentation of a major research paper. Open only to philosophy majors in the junior and senior year as approved by major advisor. May be repeated for credit.

PHIL 4198W. Proseminar in Philosophy. 3 Credits.

Variable topics; preparation and presentation of a major research paper. Open only to philosophy majors in the junior and senior year as approved by major advisor. May be repeated for credit.

PHIL 4199. Readings and Research. 1-3 Credits.

(Fall and spring).

PHIL 6201. Readings and Research. 3 Credits.

Advanced readings and reports. Investigation of special problems.

PHIL 6202. Readings and Research. 3 Credits.

Advanced readings and reports. Investigation of special problems.

PHIL 6230. Ethical Issues in Policy Arguments. 3 Credits.

Critical analysis of ethical foundations of public policy arguments, e.g., about protection of the environment or health and safety, equality of opportunity. Case studies of appeals to "welfare improvements," to norms of duty, to "the social contract," and to rights-claims. Attention to historical contexts and biases. Open to undergraduates only with permission of instructor. (Fall).

PHIL 6231. Seminar: Economic Justice. 3 Credits.

Ethical and economic analysis of equity and efficiency of current U.S. income distribution patterns. Theories of justice; economic theories of distribution; assessment of redistribution policies. Open to undergraduates only with permission of instructor. (Spring).

PHIL 6238. Feminist Ethics and Policy Implications. 3 Credits.

Feminist critiques of traditional ethical reasoning; alternative feminist ethical frameworks examined and applied to contemporary social problems (e.g., respecting cultural differences, dependency, disability). Same as WSTU 6238. Prerequisite: PHIL 2125 or PHIL 2131 or permission of instructor.

PHIL 6242. Philosophy, Law, and Social Policy. 3 Credits.

Consideration of the relationship between legal interpretation and policy goals. Theories concerning the role of the judiciary in a constitutional democracy and methods of constitutional and statutory interpretation. Representative policy topics include capital punishment, pornography, affirmative action, welfare, property rights, racial gerrymandering, gun control. (Spring).

PHIL 6245. Biomedical Ethics. 4 Credits.**PHIL 6250. Topics in Health Policy. 3 Credits.**

Topics in health policy from the perspective of philosophical ethics, including human and animal research, the enhancement of human traits, justice and health care allocation. (Spring).

PHIL 6253. Cognitive Science and Public Policy. 3 Credits.**PHIL 6262. Normative Issues in Foreign Policy. 3 Credits.**

Selected issues on foreign policy from a normative perspective; emphasis on human rights, economic globalization, global poverty, sustainable development, and the ethics of military intervention. (Fall).

PHIL 6281. Environmental Philosophy and Policy. 3 Credits.

Examination of philosophical frameworks for assessing policy approaches to environmental problems. Representative topics include duties to future generations, environmental justice, legal rights for natural objects, critiques of cost-benefit analysis, sustainability, risk measurement, the intrinsic value of nature.

PHIL 6290. Special Topics in Public Policy. 3 Credits.**PHIL 6998. Thesis Research. 3 Credits.****PHIL 6999. Thesis Research. 3 Credits.**

PHYSICAL THERAPY (PT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PT 8201. Functional Anatomy. 5 Credits.

Human gross anatomy with cadaveric dissection. Clinical correlations. Normal structure and functional relationships. Common pathologies and individual and age-related differences examined. (Fall, spring, and summer).

PT 8202. Applied Physiology. 4 Credits.

Normal function of major organ systems of the human body and related rehabilitation concepts. Exercise testing, prescription, progression and expected outcomes examined. Effects of exercise in healthy individuals across the lifespan and in special populations. (Fall, spring, and summer).

PT 8203. Neuroscience in Rehabilitation I. 3 Credits.

Normal structure and function of the nervous system across the life span. Injury to neural structures and response to injury examined. Application of principles of neuroplasticity to clinical practice. Clinical correlations. (Fall, spring, and summer).

PT 8204. Movement Science I. 2 Credits.

Normal human movement, structure and function examined using biomechanics and kinesiology principles. Biomechanical function of musculoskeletal tissues explored with special emphasis on articular systems. (Fall, spring, and summer).

PT 8205. Movement Science II. 3 Credits.

Kinematics and kinetics of movement. Normal and pathological mechanics of functional movement, including deficits in musculoskeletal system, posture, and gait. Examination of complex activities such as locomotion. (Fall, spring, and summer).

PT 8206. Neuroscience in Rehabilitation II. 2 Credits.

Neurologic mechanisms of normal and impaired posture, mobility and extremity function examined. Application of motor learning and skill acquisition principles applied. Neurological examination using case studies and clinical correlates. (Fall, spring, and summer).

PT 8207. Clinical Medicine and Pharmacology. 4 Credits.

Systems approach to diseases requiring physical therapy. Pharmacological principles and impacts of certain pharmacological agents on physical therapy intervention. Drug interactions, systems review, and "red flags" requiring physician referral addressed. (Fall, spring, and summer).

PT 8208. Medical Imaging. 1 Credit.

Principles of medical imaging related to physical therapy management, including diagnosis and intervention planning. (Fall, spring, and summer).

PT 8271. Research in Practice. 3 Credits.

Critical appraisal of the literature related to the validity of research methods and interpretation of statistical results. Application of evidence to clinical practice as it relates to physical therapy examination, diagnosis, intervention, and prognosis. (Fall, spring, and summer).

PT 8272. Research Seminar. 3 Credits.

Evidence based analysis of physical therapy literature with application of principles of research design, data analysis and synthesis to evaluate outcomes within the context of patient management. Ethical considerations are addressed. (Fall and spring).

PT 8311. Foundations of Examination. 4 Credits.

Examination within the patient/client management model of physical therapy. Development of proficiency in basic systems review, selection and administration of tests and measurements, and diagnostic classifications. (Fall, spring, and summer).

PT 8312. Foundations of Interventions. 4 Credits.

Intervention within the patient/client management model of physical therapy. Development of proficiency in basic patient care skills and selection and administration of therapeutic exercise. (Fall, spring, and summer).

PT 8313. Therapeutic Modalities. 2 Credits.

Administration of physical, thermal, mechanical, and electrical interventions consistent with patient diagnosis and prognosis. Critical appraisal of the literature to apply best evidence to practice and clinical decision making. (Fall, spring, and summer).

PT 8314. Management of Cardiopulmonary Dysfunction. 4 Credits.

Physiology and pathophysiology of the cardiopulmonary system as basis for management of the patient/client with cardiopulmonary dysfunction. Examination, evaluation, diagnosis, prognosis and implementation of evidence-based interventions in all care settings. Focus on health promotion and wellness. (Fall, spring, and summer).

PT 8315. Management of Musculoskeletal Dysfunction I. 4 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with musculoskeletal dysfunction related to the extremities. (Fall, spring, and summer).

PT 8316. Management of Musculoskeletal Dysfunction II. 4 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with musculoskeletal dysfunction related to spinal dysfunction. Ergonomic principles used to address industrial health related issues. (Fall, spring, and summer).

PT 8317. Management of Integumentary Dysfunction. 1 Credit.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with integumentary impairments and functional limitations as well as peripheral vascular, metabolic, and immune system impairments. (Fall, spring, and summer).

PT 8318. Management of Neuromotor Dysfunction. 4 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for adults with neuromotor impairments and functional limitations. (Fall, spring, and summer).

PT 8320. Management of the Pediatric Client. 4 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions for the pediatric client. Selection and administration of outcome measures for children with neuromuscular and musculoskeletal dysfunction. Psychosocial, ethical and legal factors specific to the pediatric client. (Fall, spring, and summer).

PT 8321. Women's Health. 1 Credit.

Physical therapy for issues related to women's health within the patient/client management model. (Fall, spring, and summer).

PT 8322. Management of the Aging Adult. 2 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for the geriatric population. Typical age-related changes in function. Outcome measures for neuromotor, musculoskeletal, and cardiopulmonary dysfunction in the aging population. Comorbidities, psychosocial, ethical, and legal factors. (Fall, spring, and summer).

PT 8323. Prosthetics & Orthotics. 2 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for persons with functional limitations in need of assistive technology that enhances functional capacity of persons with functional limitations. Prescription, fabrication, and fitting of prosthetic and orthotic devices. (Fall, spring, and summer).

PT 8351. Professional Issues in Physical Therapy Health Care Management I. 4 Credits.

Professional practice expectations including legal and regulatory boundaries. Interdisciplinary healthcare team examined and significance of effective communication. Ethical issues related to physical therapy within the context of professional core values. Patient management models introduced along with evidence based practice. (Fall, spring, and summer).

PT 8352. Teaching in Physical Therapy Practice. 2 Credits.

Principles and strategies for effective teaching in academic and clinical environments. Patient/client, peer, and professional presentations. (Fall, spring, and summer).

PT 8355. Professional Issues in Physical Therapy Health Care Management II. 3 Credits.

Administration and practice management, including marketing, fiscal management, billing, reimbursement, and administrative procedures related to physical therapy practice. Introduction to health care policy as related to the profession of physical therapy. Policy development, macro and micro health policy and patient advocacy. (Fall, spring, and summer).

PT 8356. Health Promotion and Wellness. 1 Credit.

The role of the physical therapist in health promotion and disease prevention across the life span. Focus on screening, client education, and traditional and nontraditional strategies for the promotion of healthy lifestyles. (Fall, spring, and summer).

PT 8357. Capstone Seminar. 1 Credit.

Exploration of professional practice issues, including lifelong learning. Professional electronic portfolios presented. Assessment of educational experiences focusing on quality improvement and professional development. (Fall, spring, and summer).

PT 8361. Clinical Conference I. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues. (Spring and summer).

PT 8362. Clinical Conference II. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues. (Fall, spring, and summer).

PT 8363. Clinical Conference III. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues. (Fall, spring, and summer).

PT 8364. Clinical Conference IV. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues. (Fall, spring, and summer).

PT 8365. Clinical Conference V. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues. (Fall, spring, and summer).

PT 8366. Clinical Conference VI. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues. (Fall, spring, and summer).

PT 8383. Prosthetics & Orthotics. 2 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for persons with functional limitations in need of assistive technology that enhances functional capacity of persons with functional limitations. Prescription, fabrication, and fitting of prosthetic and orthotic devices.

PT 8401. Physiology. 3 Credits.

Normal function of the major organ systems of the human body and related concepts of rehabilitation medicine.

PT 8402. Exercise Physiology. 2 Credits.

Lecture/laboratory. Effects of exercise in healthy individuals and special populations, including aged and immobilized patients and those with neuromusculoskeletal deficits.

PT 8403. Functional Anatomy. 5 Credits.

Lecture/laboratory. Human gross anatomy with cadaveric dissection. Clinical correlations. Normal structures and functional relationships. Common abnormalities and individual and age-related differences.

PT 8404. Kinesiology. 4 Credits.

Kinematics and kinetics of movement. Normal and pathological mechanics of functional movement, including deficits in musculoskeletal system, posture, and gait. Interventions and functional outcomes.

PT 8405. Functional Neuroanatomy & Electrodiagnostics. 3 Credits.

Lecture/laboratory. Normal structure and function of the nervous system across the life span. Injury to neural structures; response to injury and rehabilitation. Electrodiagnostics related to physical therapy. Clinical correlations.

PT 8406. Clinical Medicine & Pharmacology. 4 Credits.

Systems approach to diseases requiring physical therapy. Pharmacological principles and impacts of certain pharmacological agents on physical therapy intervention. Drug interactions, systems review, and "red flags" requiring physician referral.

PT 8407. Medical Imaging. 1 Credit.

Principles of medical imaging related to physical therapy management, including diagnosis and intervention planning.

PT 8411. Foundations of Examination. 4 Credits.

Lecture/laboratory. Examination within the patient/client management model of physical therapy. Development of proficiency in basic systems review, selection and administration of tests and measurements, and diagnostic classifications.

PT 8412. Foundations of Interventions. 3 Credits.

Lecture/laboratory. Intervention within the patient/client management model of physical therapy. Development of proficiency in basic patient care skills and selection and administration of therapeutic exercise.

PT 8413. Physical & Electrical Modalities. 3 Credits.

Lecture/laboratory. Administration of physical, thermal, mechanical, and electrical interventions consistent with patient diagnosis and prognosis. Critical appraisal of the literature to apply best evidence to practice and clinical decision making.

PT 8414. Mgt/ Cardiopulmonary Dysfunction. 3 Credits.

Physiology and pathophysiology of the cardiopulmonary system as basis for management of the patient/client with cardiopulmonary dysfunction. Focus on health promotion and disease prevention.

PT 8415. Mgt/ Musculoskeletal Dysfunction I. 4 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with musculoskeletal dysfunction related to the extremities.

PT 8416. Mgt/ Musculoskeletal Dysfunction II. 3 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with musculoskeletal dysfunction related to spinal dysfunction.

PT 8417. Mgt/ Integumentary Dysfunction. 1 Credit.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with integumentary impairments and functional limitations as well as peripheral vascul.

PT 8418. Mgt of Neuromotor Dysfunction. 4 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for adults with neuromotor impairments and functional limitations.

PT 8420. Pediatrics. 4 Credits.

Lecture/laboratory. Development issues related to pediatric impairments and functional limitations. Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for children.

PT 8421. Women's Health. 1 Credit.

Lecture/laboratory. Physical therapy for issues related to women's health within the patient/client management model.

PT 8422. Geriatrics. 2 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for the geriatric population. Typical age-related changes in function. Outcome measures for neuromotor, mus.

PT 8423. Prosthetics and Orthotics. 2 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for persons with functional limitations in need of assistive technology that enhances functional capacity (.

PT 8451. Dimensions of Prof Practice. 3 Credits.

Personal and interpersonal dimensions of health care. Professional practice expectations and six dimensions of health (i.e., physical, emotional, intellectual, spiritual, occupational, and social).

PT 8452. Teaching in Phys Therapy Practice. 2 Credits.

Principles and strategies for effective teaching in academic and clinical environments. Patient/client, peer, and professional presentations.

PT 8453. Ethical & Legal Iss/Patient Care. 1 Credit.

Ethical and legal issues related to physical therapy and consistent with the core values of the profession. Decision-making models. Legal and ethical responsibilities within the patient/client management model.

PT 8454. Health Promotion and Wellness. 1 Credit.

The role of the physical therapist in health promotion and disease prevention across the life span. Focus on screening, client education, and traditional and nontraditional strategies for the promotion of healthy lifestyles.

PT 8455. Admin & Mgt/Phys Therapy Practice. 2 Credits.

Administration and practice management, including marketing, fiscal management, billing, reimbursement, and administrative procedures related to physical therapy practice.

PT 8456. Health Policy and Advocacy. 1 Credit.

Introduction to health care policy as related to the profession of physical therapy. Policy development, macro and micro health policy.

PT 8457. Capstone Seminar. 1 Credit.

Exploration of professional practice issues, including lifelong learning. Professional electronic portfolios presented. Assessment of educational experiences focusing on quality improvement and professional development.

PT 8461. Clinical Conference I. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8462. Clinical Conference II. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8463. Clinical Conference III. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8464. Clinical Conference IV. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8465. Clinical Conference V. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8466. Clinical Conference VI. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8481. Interprofessional Community Practicum. 1 Credit.

Students explore the concepts of community health, health prevention/wellness, cultural competence, continuous quality improvement, and team building through active participation in a university community health service learning project. (Fall, spring, and summer).

PT 8483. Integrated Clinical Experience I. 1 Credit.

Part-time physical therapy clinical experiences in a range of clinical settings. Supervised integration and implementation of components of the patient/client management model and professional practice expectations. (Fall, spring, and summer).

PT 8484. Integrated Clinical Experience II. 1 Credit.

Part-time physical therapy clinical experiences in a range of clinical settings. Supervised integration and implementation of components of the patient/client management model and professional practice expectations in preparation for full-time clinical in (Fall, spring, and summer).

PT 8487. Clinical Internship I. 4 Credits.

Full-time physical therapy clinical experiences in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from close.

PT 8488. Clinical Internship II. 6 Credits.

Full-time physical therapy clinical experiences in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from close.

PT 8489. Clinical Internship III. 7 Credits.

Full-time physical therapy clinical experiences in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from close.

PT 8490. Externship Elective. 0-8 Credits.

Interested students can apply for consideration of an externship in advanced clinical practice, teaching, research, or governmental affairs. Credit varies based on the length of stay and demands of the externship.

PT 8491. Clinical Internship I. 5 Credits.

Full-time physical therapy clinical experience in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from advanced beginner to entry-level performance in the management of patients with non-complex and complex problems across the life span. (Fall, spring, and summer).

PT 8492. Clinical Internship II. 8 Credits.

Full-time physical therapy clinical experience in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from advanced beginner to entry-level performance in the management of patients with non-complex and complex problems across the life span. (Fall, spring, and summer).

PT 8493. Clinical Internship III. 9 Credits.

Full-time physical therapy clinical experience in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from advanced beginner to entry-level performance in the management of patients with non-complex and complex problems across the life span. (Fall, spring, and summer).

PHYSICIAN ASSISTANT (PA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PA 2116. Medical Terminology. 0 Credits.**PA 6210. Health, Justice & Society I. 2 Credits.**

Presentation and discussion of issues including social determinants of health, cultural competency, ethical principles, epidemiology, and patient safety. Community service component in 6211.

PA 6211. Health, Justice & Society II. 1 Credit.

Presentation and discussion of issues including social determinants of health, cultural competency, ethical principles, epidemiology, and patient safety. Community service component in 6211.

PA 6215. Community Service Curriculum. 3 Credits.**PA 6219. Role of PA in Amer Health Care. 2 Credits.**

The history, development, and current status of the physician assistant profession within the context of the U.S. health system, such as practice roles, legal issues, and economic aspects of the profession.

PA 6225. Clinical Medicine. 3 Credits.

Interdisciplinary course in the theory of medicine using an organ system approach. Clinical findings and pathophysiology for a wide spectrum of diseases. Diagnosis and management of diseases in a variety of medical and surgical specialties.

PA 6226. Clinical Medicine II. 10 Credits.

Interdisciplinary course in the theory of medicine using an organ system approach. Clinical findings and pathophysiology for a wide spectrum of diseases. Diagnosis and management of diseases in a variety of medical and surgical specialties.

PA 6229. Human Behavior. 2 Credits.

Basic knowledge of psychiatry needed to enter clinical practice. Mental status examination as a tool of clinical assessment. Approaches to understanding and working with patients with mental health conditions.

PA 6230. Clinical Skills I. 2 Credits.

Fundamentals of electrocardiography and interpretation of basic EKG patterns. Effects of drugs and electrolyte imbalance on EKG patterns. Interpretation of radiologic films. Development of clinical skills including suturing, gowning and gloving, CPR and A.

PA 6231. Clinical Skills II. 1 Credit.

Fundamentals of electrocardiography and interpretation of basic EKG patterns. Effects of drugs and electrolyte imbalance on EKG patterns. Interpretation of radiologic films. Development of clinical skills including suturing, gowning and gloving, CPR and A.

PA 6234. Clinical Assessment. 4 Credits.

Development of patient interviewing, documentation and physical examination skills.

PA 6237. Med Microbiology & Infect Dise. 4 Credits.

Knowledge and understanding of microorganisms including bacteria, viruses, fungi and parasites causing infectious diseases in human beings and impact on the immune system.

PA 6240. Integration Clin Concepts I. 2 Credits.

Integration and clinical application of basic science courses, clinical assessment and clinical medicine using clinical cases with faculty facilitation. Development of clinical decision making skills including selection of appropriate pharmacological and.

PA 6241. Integration Clin Concepts II. 2 Credits.

Integration and clinical application of basic science courses, clinical assessment and clinical medicine using clinical cases with faculty facilitation. Development of clinical decision making skills including selection of appropriate pharmacological and.

PA 6242. Integration Clin Concepts III. 2 Credits.

Integration and clinical application of basic science courses, clinical assessment and clinical medicine using clinical cases with faculty facilitation. Development of clinical decision making skills including selection of appropriate pharmacological and.

PA 6245. Introduction to Primary Care. 2 Credits.**PA 6246. Clinical Applications. 3 Credits.****PA 6248. Intro to Electrocardiography. 1 Credit.****PA 6260. LT Palliative Care Clin Pract. 2 Credits.****PA 6261. Inpatient Med Clinical Practic. 5 Credits.**

This is a six-week required clinical rotation for second year PA students which focuses on the role of the physician assistant in a hospital based inpatient setting. The student will actively engage in applying the medical knowledge and clinical skills gained during the didactic year while continuing to develop clinical reasoning through an evidence-based approach to the evaluation and management of problems commonly encountered in inpatient settings. Students will also work to incorporate health promotion and disease prevention as well as advocacy for healthy lifestyles, preventive medicine practices, and patient support.

PA 6262. Ambul Care Clinical Practicum. 5 Credits.

The Ambulatory Care Clinical Practicum is a six-week, required clinical rotation for second-year PA students, which focuses on the role of the physician assistant in an ambulatory care setting (clinic or private practice). The student will actively engage in applying the medical knowledge and clinical skills gained during the didactic year while continuing to develop clinical reasoning through an evidence-based approach to the evaluation and management of primary care problems encountered in ambulatory care settings. Students will also work to incorporate health promotion and disease prevention into patient care and advocate for healthy lifestyles.

PA 6263. Surg Inpatient Clinical Practi. 5 Credits.

This is a six-week, required clinical rotation for second year PA students, which focuses on inpatient care of the surgical patient and the role of the physician assistant on the surgical patient management team.

PA 6264. Women's Health Clin Pract. 5 Credits.

This is a six-week required clinical rotation for second year PA students, which focuses on the role of the physician assistant in women's health. The student will actively engage in applying the medical knowledge and clinical skills gained during the didactic year, along with continuing to develop clinical reasoning through an evidence-based approach to the evaluation and management of health care issues commonly encountered in women's health. Students will also work to incorporate health promotion and disease prevention as well as advocacy for healthy lifestyles and preventive medicine practices and patient support.

PA 6265. Pediatrics Clinical Practicum. 5 Credits.

This is a six-week required clinical rotation for second year PA students which focuses on the role of the physician assistant in a pediatric care setting. The student will actively engage in applying the medical knowledge and clinical skills gained during the didactic year, along with continuing to develop clinical reasoning through an evidence-based approach to the evaluation and management of common medical problems and issues encountered in the pediatric medicine. Students will also work to incorporate health promotion and disease prevention as well as advocacy for healthy lifestyles and preventive medicine practices and patient support.

PA 6266. Emergency Medicine Clinical Pr. 5 Credits.

This is a six-week required clinical practicum for second year PA students, which focuses on the role of the physician assistant in the emergency department setting. The student will actively engage in applying the medical knowledge and clinical skills gained during the didactic year while continuing to develop clinical reasoning through an evidence-based approach to the evaluation and management of common problems encountered in emergency medicine.

PA 6267. Behav Med Clin Pract. 5 Credits.

This is a six-week required clinical rotation for second year PA students, which focuses on the role of the physician assistant in psychiatric and/or behavioral medicine. The student will actively engage in applying the medical knowledge and clinical skills gained and continue to develop clinical reasoning through an evidence-based approach to the evaluation and management of common problems in patients with psychiatric, emotional and behavioral disturbances. Students will also work to adapt the standard medical history, physical examination, diagnostic and treatment plans to the psychiatric patient.

PA 6268. Elective Clinical Practicum I. 5 Credits.

This is a six-week required clinical rotation in a medical or surgical specialty of the student's choosing and offers the student an opportunity to explore a specialty practice in greater detail.

PA 6269. Final Clinical Practicum. 4 Credits.

This clinical practicum is the final four-week required clinical rotation for second-year PA students that represents a culmination of all previously completed rotations and focuses on the student working most closely at the level of a graduate clinician. The student will actively engage in applying the medical knowledge and clinical skills gained during both the didactic and clinical year in continuing to develop clinical reasoning through an evidence-based approach to the evaluation and management of medical/surgical diseases, illnesses, conditions and/or problems encountered in the practice of medicine.

PA 6270. Foun Evidence Based Practice. 3 Credits.

Methodological and statistical issues of health-related research. Development of knowledge and skills to critically appraise and synthesize research results, analyze qualitative and quantitative data, evaluate evidence-based methods, develop research que.

PA 6271. Clin Apps Evidence Base Prac. 2 Credits.

Advanced application of research, statistical and evidence-based medicine with emphasis on evaluation of therapeutic, diagnostic and prognostic studies and their applicability to the clinical setting.

PA 6275. Elective Clinical Practicum II. 2 Credits.**PA 6280. Surgical Specialty Practice. 2 Credits.**

Advanced techniques and management of selected conditions encountered in general surgery and surgical subspecialty settings.

PA 6281. Surgical Skills Lab. 2 Credits.

Surgical techniques covered include advanced knot tying, placement of central lines and chest tubes, thoracocentesis, and arterial cannulation Emphasis on laparoscopic surgery techniques.

PA 6299. Independent Study. 1-12 Credits.

Faculty approved didactic or clinical course work primarily used for remediation purposes.

PHYSICS (PHYS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHYS 0801W. Dean's Seminar. 3 Credits.**PHYS 1000. Dean's Seminar. 3 Credits.****PHYS 1003. Physics for Future Presidents. 0-4 Credits.**

A serious but accessible presentation of topics important for leaders to know—energy, global climate, high-tech devices, space travel, nuclear weapons, etc. Students possessing any level of scientific background are equipped with the concepts and analytical tools needed to make informed decisions and to argue their view persuasively. Laboratory fee.

PHYS 1003W. Physics for Future Presidents. 0-4 Credits.**PHYS 1005. How Things Work. 4 Credits.**

Primarily for non-science majors. Physical principles are introduced through a study of everyday objects to see what makes them tick. This unconventional approach is primarily conceptual in nature and intended for students seeking a connection between science and the world in which they live. Prerequisite: high school algebra and trigonometry. Laboratory fee.

PHYS 1007. Music and Physics. 4 Credits.

Primarily for non-science majors. A comparative study of music and physics, showing parallels in the history of the two fields and emphasizing those topics in physics related to the theory of music and the production of sound by musical instruments, particularly classical mechanics and wave motion. Prerequisite: high school algebra and geometry. Laboratory fee.

PHYS 1007W. Music and Physics. 4 Credits.

Primarily for non-science majors. A comparative study of music and physics, showing parallels in the history of the two fields and emphasizing those topics in physics related to the theory of music and the production of sound by musical instruments, particularly classical mechanics and wave motion. Prerequisite: high school algebra and geometry. Laboratory fee.

PHYS 1008. Origin and Evolution of Ideas in Physics. 4 Credits.

Primarily for non-science majors. The evolution of ideas and their historical continuity in the search for basic physical theories. By presenting the world-views of great physicists of the past, the division of physics into many sub-disciplines is avoided and a humanistic approach is achieved. Prerequisite: high school algebra. Laboratory fee.

PHYS 1008W. Origin and Evolution of Ideas in Physics. 4 Credits.

Primarily for non-science majors. The evolution of ideas and their historical continuity in the search for basic physical theories. By presenting the world-views of great physicists of the past, the division of physics into many sub-disciplines is avoided and a humanistic approach is achieved. Prerequisite: high school algebra. Laboratory fee.

PHYS 1011. General Physics I. 4 Credits.

Classical physics. Mechanics, including Newton's laws of motion, force, gravitation, equilibrium, work and energy, momentum, and rotational motion; periodic motion, waves, and sound; heat and thermodynamics. Prerequisite: high school trigonometry. Laboratory fee.

PHYS 1012. General Physics II. 4 Credits.

Classical and modern physics. Electrostatics, electromagnetism, direct and alternating current circuits, and electromagnetic radiation; geometrical and physical optics; special relativity; quantum theory; atomic physics; nuclear physics; particle physics; astrophysics and cosmology. Prerequisite: PHYS 1011. Laboratory fee.

PHYS 1021. University Physics I. 4 Credits.

Classical mechanics and thermodynamics using calculus. Newtonian mechanics: force, momentum, work and energy, mechanical equilibrium, linear, and rotational motion. Gravitation and fields. Atoms, physical properties of matter. Energy transfer and waves, sound. Prerequisite: MATH 1231; corequisite: MATH 1232. Laboratory fee.

PHYS 1022. University Physics II. 4 Credits.

Periodic motion, waves, and classical electromagnetism using calculus. Waves and sound. Electrostatics, Gauss's law, capacitance. Electric resistance, electric current. Magnetism. Electrodynamics and electromagnetic induction. Maxwell's theory and electromagnetic radiation. Geometric and physical optics. Laboratory fee. Prerequisites: PHYS 1021. (Spring).

PHYS 1022W. University Physics 2. 4 Credits.

Periodic motion, waves, and classical electromagnetism using calculus. Waves and sound. Electrostatics, Gauss's law, capacitance. Electric resistance, electric current. Magnetism. Electrodynamics and electromagnetic induction. Maxwell's theory and electromagnetic radiation. Geometric and physical optics. Prerequisite: PHYS 1021. Laboratory fee.

PHYS 1023. Modern Physics. 3 Credits.

Modern physics using calculus. Relativity. Wave-particle duality, quantum mechanics. The hydrogen atom, Pauli principle. Quantum statistics and radiation. Quantum theory of the condensed state, superconductivity. Nuclear physics. Applications to astrophysics and nucleosynthesis. General relativity. The big bang theory. Prerequisite: PHYS 1022, MATH 2233.

PHYS 1023W. Modern Physics. 3 Credits.

Modern physics using calculus. Relativity. Wave-particle duality, quantum mechanics. The hydrogen atom, Pauli principle. Quantum statistics and radiation. Quantum theory of the condensed state, superconductivity. Nuclear physics. Applications to astrophysics and nucleosynthesis. General relativity. The big bang theory. Prerequisite: PHYS 1022, MATH 2233.

PHYS 1025. University Physics I with Biological Applications. 4 Credits.

Classical mechanics and thermodynamics using calculus. Newtonian mechanics: force, momentum, work and energy, mechanical equilibrium, linear and rotational motion, fluids. Energy transfer, statistical models, and entropy. Physics principles and problem solving will be taught with examples and problems from the life sciences. Prerequisite: Math 1232; corequisite: Math 1232. Laboratory fee. (Spring) Credit cannot be earned for both PHYS 1021 and 1025.

PHYS 1026. University Physics II with Biological Applications. 4 Credits.

Periodic motion waves, and classical electromagnetism using calculus. Waves and sound. Electrostatics, Gauss's law, capacitance. Electric resistance, electric current. Magnetism. Electrostatics in ionic solutions and cells, circuit models for nerves and ion channels. Geometric and physical optics. Physics principles and problem solving will be taught with examples and problems from the life sciences. Prerequisite: PHYS 1021 or 1025, MATH 1232. Laboratory fee. (FALL) Credit cannot be earned for both PHYS 1022 and 1026.

PHYS 2127. Biophysics: Macroscopic Physics in the Life Sciences. 3 Credits.

Physical principles applied to biological systems and medicine, and current instrumentation and technology. Topics include blood flow, ultrasonics, spectroscopy, radiation biology, bioenergetics, ordering theory, and neural networks. Prerequisite: PHYS 1012 or PHYS 1022; MATH 2233.

PHYS 2128. Biophysics: Microscopic Physics in the Life Sciences. 3 Credits.

Physical principles applied to biological systems on the nanometer scale. Topics include intermolecular forces, statistical principles applied to biological microstates, determining protein and nucleic acid structures, operation of protein motors and transport systems, together with nanotechnology and instrumentation. Prerequisite: PHYS 1012 or PHYS 1022; MATH 2233.

PHYS 2151. Intermediate Laboratory I: Techniques and Methods. 3 Credits.

Experiments in electromagnetism, classical and quantum mechanics, atomic and nuclear physics with emphasis on experimental methods. Corequisite: PHYS 1023. Laboratory fee.

PHYS 2151W. Intermediate Laboratory I: Techniques and Methods. 3 Credits.

Experiments in electromagnetism, classical and quantum mechanics, atomic and nuclear physics with emphasis on experimental methods. Corequisite: PHYS 1023. Laboratory fee.

PHYS 2152. Intermediate Laboratory II: Instrumentation. 3 Credits.

Elementary electric and electronic analog and digital circuits. Topics include passive and active components in DC and AC circuits and operational amplifiers, with emphasis on measurement techniques. Laboratory fee. (Spring).

PHYS 2161. Mechanics I. 3 Credits.

Mechanics of mass points and rigid bodies. Newton's laws, conservation laws, Euler's equations, inertia tensor, small vibrations, and elements of Lagrange's and Hamilton's equations. Prerequisite: PHYS 1023; MATH 2233.

PHYS 2163. Physical and Quantum Optics. 3 Credits.

Wave motion, electromagnetic aspects of light, dispersion of light in media, geometrical optics, polarization and optical properties of crystals, interference, diffraction, lasers, holography. Mathematical tools, including Fourier methods, developed as needed. The quantum description of light complements the classical description. Prerequisite: PHYS 1023; MATH 2233. Laboratory fee.

PHYS 2164. Thermal and Statistical Physics. 3 Credits.

Principles and application of thermodynamics to reversible and irreversible processes, with derivation from statistical postulates applied to the microscopic behavior of large systems at or near equilibrium. Topics include equilibrium thermodynamics, statistical mechanics, and kinetic theory of gases. Prerequisite: PHYS 1023; MATH 2233.

PHYS 2165. Electromagnetic Theory. 3 Credits.

Electrostatics and magnetostatics, electric and magnetic fields in matter, scalar and vector potentials, electromagnetic induction. Maxwell's equations. The methods of vector and tensor calculus are developed as needed, as are the method of images, Fourier series, and some computational methods. Prerequisite: PHYS 1023; MATH 2233.

PHYS 2166. Electromagnetic Theory. 3 Credits.

Conservation laws, electromagnetic waves, radiation, relativistic formulation of electrodynamics and potential fields. Prerequisite: PHYS 2165.

PHYS 2167. Principles of Quantum Physics. 3 Credits.

The conceptual framework and mathematical formalism of quantum mechanics. Wave-particle duality, wave functions, and eigenvalues. Schrödinger Equation and one-dimensional potential problems. Angular momentum, central potentials, and the hydrogen atom. Identical particles and spin. Scattering theory. Perturbation theory. Prerequisite: PHYS 1023; MATH 2233.

PHYS 2170. Solid-State Physics. 3 Credits.

Structure of solids, lattices and lattice defects, deformation, vibrational and electronic contribution to specific heats, binding energies, electronic states in metals and semiconductors, magnetic properties of solids, superconductivity. Prerequisite: PHYS 2167 or permission of instructor.

PHYS 2175. Nuclear Physics. 3 Credits.

Application of quantum physics to the description of nuclei and their interactions. Properties of nuclei, nuclear models, nuclear forces, and nuclear reactions are considered. Specific topics include the deuteron, n-p scattering, the optical model, the shell model, the liquid-drop model, beta decay, fission, and fusion. Prerequisite: PHYS 2167 or permission of instructor.

PHYS 2181. Computational Mechanics. 3 Credits.

Topics include celestial mechanics, chaotic systems, fluid dynamics, and other such complex systems that require a computational approach. Prerequisite: MATH 2233; at least one upper-division physics course; working knowledge of C, FORTRAN, or Java. Laboratory fee.

PHYS 2182. Computational Electricity/Magn. 3 Credits.**PHYS 2183. Computational Modern Physics. 3 Credits.****PHYS 2190. Special Topics in Physics. 0-4 Credits.**

Courses offered by visiting faculty or other experimental offerings. Topics announced on a semester basis. May be repeated for credit provided the topic differs.

PHYS 2192. Independent Study in Physics. 1-3 Credits.

Independent readings or directed study under the supervision of a faculty member. Credit varies, depending upon the nature of the work. May be repeated once for credit.

PHYS 4195. Undergraduate Research. 3 Credits.

Research on problems in physics approved by the faculty. May be repeated once for credit.

PHYS 4196. Undergraduate Research in Biophysics. 3 Credits.

Research on problems in biophysics approved by the faculty. May be repeated once for credit.

PHYS 4197. Undergraduate Research in Nuclear Physics. 3 Credits.

Research on problems in nuclear physics approved by the faculty. May be repeated once for credit.

PHYS 5701. Selected Topics. 0-4 Credits.**PHYS 6110. Mathematical Methods of Theoretical Physics. 4 Credits.**

Calculus of variations. Group theory. Tensor calculus. Review of techniques of linear algebra. Hilbert spaces and operator theory. Special functions and expansion in complete orthogonal sets of functions. Solutions of partial differential equations, Green's functions method and boundary-value problems. Integral equations. Complex analysis and theory of analytic functions. Prerequisite: Consent of a departmental graduate advisor. Corequisite: PHYS 6130.

PHYS 6120. Advanced Mechanics. 4 Credits.

Analytic methods of mechanics as a basis for modern theory. Variational principles. Lagrange's equations. Hamiltonian formulation. Canonical transformations. Classical perturbation theory. Nonlinear systems. Special relativity. Prerequisite: Consent of a departmental graduate advisor. Corequisite: PHYS 6130.

PHYS 6130. Computational Physics I. 1 Credit.

Taken in conjunction with PHYS 6110 and PHYS 6120.

PHYS 6210. Electrodynamics and Classical Field Theory. 4 Credits.

Principles of electro- and magneto-statics. Classical field theory. Maxwell's equations, least-action and symmetry principles. Time-varying fields and plane-wave propagation. Radiating systems and scattering of radiation, including multipole fields. Dynamics of relativistic particles and radiation from moving charges. Electrodynamics in media: relation between microscopic parameters and macroscopic observables. Prerequisite: Consent of a departmental graduate advisor. Corequisite: PHYS 6230.

PHYS 6220. Quantum Mechanics I. 4 Credits.

General aspects of quantum mechanics with emphasis upon the developmental principles involved. Operators, representations, transformation theory. Schroedinger and Heisenberg pictures, angular momentum, perturbation and scattering theory. Introduction to relativistic quantum field theory, first-order electromagnetic processes. Many-body theory. Prerequisite: Consent of a departmental graduate advisor. Corequisite to PHYS 6220: PHYS 6230; to PHYS 6320: PHYS 6330.

PHYS 6230. Computational Physics II. 1 Credit.**PHYS 6310. Statistical Mechanics. 4 Credits.**

Classical and quantum statistics. Gibbs paradox, microscopic origins of entropy and other thermodynamic variables, fluctuations, ensemble theory, partition functions, distribution functions, density matrices. Applications include the harmonic oscillator, magnetic systems, ideal Fermi-Dirac and Bose-Einstein systems, blackbody radiation, phonons. Renormalization group, phase transitions and critical phenomena. Prerequisite: Consent of a departmental graduate advisor. Corequisite: PHYS 6330.

PHYS 6320. Quantum Mechanics II. 4 Credits.**PHYS 6330. Computational Physics III. 1 Credit.****PHYS 6510. Communications in Physics. 0-3 Credits.**

Student presentations on advanced topics in physics. Prerequisite: Consent of a departmental graduate advisor.

PHYS 6580. Laboratory. 3 Credits.

Selected experiments on nuclear and solid-state physics. Laboratory fee. Prerequisite: Consent of a departmental graduate advisor.

PHYS 6590. Seminar. 0-1 Credits.

Lectures on current topics in physics. May be repeated for credit. Prerequisite: Consent of a departmental graduate advisor.

PHYS 6599. Advanced Study. 3 Credits.

For students who have completed three semesters of course work in the core graduate physics curriculum. Problem sets aimed at development of a deeper and more advanced understanding of physics. (Spring).

PHYS 6610. Nuclear and Particle Physics I-II. 3 Credits.

Theory and experiment of the standard model of elementary particle physics of strong and electro-weak interactions. Emergence of nuclear interactions and pion physics. Effective field theory, non-perturbative methods, lattice simulations, nuclear models, nuclear reactions. Path integral, gauge fields, S-matrix theory, dispersion relations, renormalization program. Prerequisite: PHYS 6320 and consent of a departmental graduate advisor.

PHYS 6620. Biophysics I. 3 Credits.

Topics include molecular biophysics, modern simulation methodologies and experimental methodologies for probing biological systems.

PHYS 6630. Astrophysics I. 3 Credits.

Astrophysical examination of stellar evolution, including properties of stellar matter, equations of state, nucleosynthesis, red giants, supernovae, white dwarfs, close binary stellar systems, gamma-ray bursts. Overview of observational techniques, including photometry; IR, UV, X-ray observation, gamma-ray frequencies; astrophysical data analysis; evidence for stellar and cosmological models. Prerequisite: Consent of a departmental graduate advisor.

PHYS 6710. Nuclear and Particle Physics II. 3 Credits.

Theory and experiment of the standard model of elementary particle physics of strong and electro-weak interactions. Emergence of nuclear interactions and pion physics. Effective field theory, non-perturbative methods, lattice simulations, nuclear models, nuclear reactions. Path integral, gauge fields, S-matrix theory, dispersion relations, renormalization program. Prerequisite: Phys 6320. (Academic year).

PHYS 6720. Biophysics II. 3 Credits.

Phys 6720: Topics include theoretical and computational methods for genes, proteins, and bionetworks; models of biological complexity; applications of non-equilibrium statistical mechanics and combinatorial optimization. Prerequisite: Phys 6310. This course may be taken repeatedly for credit to a maximum of 15 credits.

PHYS 6730. Astrophysics II. 3 Credits.**PHYS 6998. Thesis Research. 3 Credits.****PHYS 6999. Thesis Research. 3 Credits.****PHYS 8110. Selected Topics in Theoretical Nuclear Physics. 3 Credits.**

Prerequisite: Consent of a departmental graduate advisor. May be repeated once for credit with permission of graduate advisor.

PHYS 8120. Selected Topics in Experimental Nuclear Physics. 3 Credits.

Prerequisite: Consent of a departmental graduate advisor. May be repeated once for credit with permission of graduate advisor.

PHYS 8130. Selected Topics in Theoretical Biophysics. 3 Credits.

Prerequisite: Consent of a departmental graduate advisor. May be repeated once for credit with permission of graduate advisor.

PHYS 8140. Selected Topics in Experimental Biophysics. 3 Credits.

Prerequisite: Consent of a departmental graduate advisor. May be repeated once for credit with permission of graduate advisor.

PHYS 8150. Selected Topics in Astrophysics. 3 Credits.

Prerequisite: Consent of a departmental graduate advisor. May be repeated once for credit with permission of graduate advisor.

PHYS 8998. Advanced Reading and Research. 1-4 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated once for credit.

PHYS 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

PHYSIOLOGY (PHYL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHYL 2111. Phyl for Health Sci Students. 4 Credits.**PHYL 6201. Physiology. 6 Credits.**

Required for medical students, open to graduate students. Cellular, organ system, and applied human physiology. Prerequisite for graduate students: Anat 201 or Phyl 191, or equivalent; Bioc 221 or Phyl 205, or consent of department chair. Concurrent regis.

PHYL 6205. Regulatory Cell Biology. 2 Credits.**PHYL 6211. Physiology for Health Sci Std. 3 Credits.**

Functional processes, including cellular, muscular, cardiovascular, renal, pulmonary, gastrointestinal, endocrine, and nervous systems.

PHYL 6253. Phyl-Fluid Bal & H Ion Regulatn. 2 Credits.**PHYL 6269. Topics-Neuro/Psychophysiology. 2 Credits.****PHYL 6282. Experimental Physiology. 1-12 Credits.****PHYL 6290. Extramural Physiology Elective. 1-12 Credits.****PHYL 6291. Extramural Physiology Elective. 1-12 Credits.****PHYL 6295. Research. 1-12 Credits.**

By special arrangement with individual staff members. Approximately four hours per week in the laboratory for each credit hour of credit. May be repeated for credit.

PHYL 6298. Comprehensive Physiology. 5 Credits.**PHYL 6502. Biomed Sci/Clin Corr inDisease. 1-12 Credits.****PHYL 8800. Summer Remedial: Physiology. 8 Credits.**

POLITICAL MANAGEMENT (PMGT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PMGT 1000. Dean's Seminar. 3 Credits.**PMGT 4101. Electoral&LegislativeProcesses. 3,4 Credits.****PMGT 4107. Practicum in Political Mgt. 3,4 Credits.****PMGT 4187. Professional Internship. 3-4 Credits.****PMGT 4192. Tutorial-Amer Elect& PolMvmnts. 3-4 Credits.****PMGT 6204. Communications Strategy. 3 Credits.**

Formulation of political communications strategies. Elements necessary to create, introduce, and maintain an effective political profile in issue advocacy campaigns, candidate elections, and legislative advocacy campaigns. Application of principles of research, advertising, and marketing to the political landscape. Prerequisite: PMGT 6203.

PMGT 6205. Ethics for Political Managers. 3 Credits.

Professional responsibilities of political managers. Introduction to political leadership as ethics in action, starting with concrete situations and reasoning back to constitutional and philosophical principles. Laws and regulations that affect political activity (conflict of interest, disclosure, lobbying registration, campaign finance, fraud) (Fall, spring, and summer).

PMGT 6206. Political Leadership. 3 Credits.

Theory and practice of political leadership. Introduction to leadership theory. Application through self-assessment of leadership skills and potential. Communications practices for exercising political leadership. (Fall, spring, and summer).

PMGT 6207. Strategies of Message Devlpmnt. 3 Credits.**PMGT 6210. PolMgt & StrategicGovernance. 3 Credits.****PMGT 6221. Fundraising for Organizations. 3 Credits.**

Advanced business and techniques of fundraising for charitable, trade association, semiprivate, and public institutions. Topics include long-range financial stability for organizations, including membership strategies, new technology (Internet and mobile), direct mail, telemarketing, and special events. (Spring).

PMGT 6240. Campaign Management. 3 Credits.**PMGT 6242. Campaign Organization. 3 Credits.**

PMGT 6243. Strategic Factors-Pres Campaigns. 3 Credits.

PMGT 6244. Lobbying the European Union II. 3 Credits.

Intensive six-week program exploring the rules, tactics, and techniques of lobbying in the European Union.

PMGT 6245. Lobbying the European Union II. 3 Credits.

Continuation of PMGT 6244. Intensive two-week practicum applying lessons learned in PMGT 6244; held at the College of Europe and EU headquarters in Belgium.

PMGT 6246. Political Communications Strat. 3 Credits.

PMGT 6262. Law of the Political Process. 3 Credits.

PMGT 6270. Systems Approach-Envir Issues. 3 Credits.

PMGT 6271. Public Policy & the Environment. 3 Credits.

PMGT 6280. Leadership and Politics. 3 Credits.

PMGT 6281. Running for Office. 3 Credits.

PMGT 6292. Practicum (Spanish). 3 Credits.

PMGT 6293. ConfrontManag&AllianceBldg. 3 Credits.

PMGT 6401. Fundamentals of Political Management. 3 Credits.

Main concepts, arenas, developments, roles, and practices in the field of political management. Assess rhetorical situations, write strategy memos, create and critique campaign messages, and engage citizens, professional colleagues and decision-makers. Taken in first semester of program. (Professors M. Cornfield and TBD.) (Fall, spring, and summer).

PMGT 6402. Applied Political Communications. 3 Credits.

Models and methods by which professionals plan, produce, and adjust strategic communication messages in democratic politics. Use a variety of communication forms and media, such as, fact sheets, blog posts, video releases, and public addresses, under typical constraints of time, money, information, reputation, talent, audience attentiveness, and institutional procedure. Students to enroll by their sixth course in the program. Core requirement; Must be completed before a student reaches 18 credit hours. (Fall, spring, and summer).

PMGT 6403. Political Data and Analytics. 3 Credits.

Introduction to the uses of quantitative data and statistics in politics. Learn to evaluate research designs, statistical associations, causal reasoning, methods for hypothesis testing, multivariate regression analyses, and data analytics. Consume and critique data and statistics for strategic purposes. Students to enroll by their sixth course in the program. Core requirement. Must be completed before a student reaches 18 credit hours. (Fall, spring, and summer).

PMGT 6404. Principled Political Leadership. 3 Credits.

Theory and practice of ethically grounded political leadership. Consideration of the recurrent dilemmas, philosophical principles, management techniques, codes of conduct, and professional norms in the political management field. Application through self-assessment exercises, case study analysis, and individual and group simulations. Students to enroll by their sixth course in the program. Core requirement. Must be completed before a student reaches 18 credit hours. (Fall and spring).

PMGT 6410. Grassroots Engagement. 3 Credits.

Strategies and techniques to build advocacy support among and across general civic populations. Identification of potential supporters through database targeting and individual outreach. Motivation and training of interested supporters for grassroots action in campaigns, at public forums, and before decision-makers. Coalition and protest options; analytics of ongoing efforts. (Professors E. Grefe, S. Gagen) (Fall).

PMGT 6412. Issues Management. 3 Credits.

Track, influence, and alter politically significant issue-related discourses and policy developments. Legislative, executive, and judicial venues and processes for policymaking; state referendum, initiative, and recall ballot opportunities; organizational structures, including digital procedures, for issue management. (Professors M. Edwards, E. Grefe) (Spring).

PMGT 6414. Lobbying. 3 Credits.

Survey of and training for lobbying in the U.S. federal system. Students design a detailed lobbying plan for implementation and practice a variety of influence techniques, including those associated with digital media and communications technologies. Legal compliance, organizational and public accountability, professional standards and practices. (Professor J. Hobson) (Spring).

PMGT 6415. Manejo de Crisis. 3 Credits.

PMGT 6422. State and Intergovernmental Politics. 3 Credits.

Examination of the electoral pressures on state and local legislators. Methods and techniques for advocacy in various state capitals. The governing responsibilities of constitutionally-delegated to states and the ever-changing historical relationship between states and the federal government. (Professors C. Shank) (Fall and spring).

PMGT 6430. Campaign Strategy. 20 Credits.

Orientation to the basic systems and technologies that must be created and managed to produce electoral victory. The campaign plan and campaign budget as the foundation for management of campaigns. Focus on development of a campaign plan. (Professor M. Meissner) (Fall).

PMGT 6432. Managing Campaigns. 3 Credits.

Understanding the role of a campaign manager in staffing and running a campaign, while executing the campaign plan. Candidate handling, fundraising, website and technology, geographic and demographic targeting, field organization, canvassing, get-out-the-vote, press operations, budget control, and liaison with the party and interest groups. (Professors TBD) Prerequisites: PMGT 6430. (Spring, even years).

PMGT 6434. Running for Office. 3 Credits.

Electoral politics from the perspective of the candidate, strategic and personal factors involved in the decision to run and the consequences of victory or defeat. (Professor R. Faucheux) (Spring, odd years).

PMGT 6436. National Campaign Dynamics. 3 Credits.

Examination of the historical and systematic patterns in national elections. Differences between presidential and midterm elections; House and Senate contests; party nomination races and general elections; primaries and caucuses; Democratic and Republican party delegate selection rules; causes for "wave" elections; effect of the economy on election outcomes; and standard vice presidential selection models. The political and partisan structural conditions that exist before any of the candidates or the campaigns get involved. (Fall).

PMGT 6438. State and Local Campaigns. 3 Credits.

Application of campaign strategy and management principles to electoral races at the state and local levels. Staffing, budgeting, and strategic challenges for what are typically lower-visibility contests that involve state and local candidates. Coordinated campaigns and the impact of the national party's reputation on these down-ballot races. (Professor TBD) (Summer).

PMGT 6440. Targeting and Voter Contact. 3 Credits.

How to find voters for electoral and advocacy campaigns and tailor communications to them. Database analytics, list management, questionnaire design, target weighting, predictive modeling. Review of randomized and natural experiments in light of theoretic principles and findings from public opinion research. Skill development in use of spreadsheets and basic statistical packages. Lab fee. (Professors B. Russell, A. Strauss) Prerequisites: PMGT 6403. (Spring).

PMGT 6442. Campaigns Around the World. 3 Credits.

Comparative examination of national-level campaigns in democratic countries outside of the United States. Strategies, techniques, and practices used in multi-party and/or parliamentary systems. Professional conduct, consulting rules and norms. (Fall, even years).

PMGT 6450. Rules, Laws, and Strategy. 3 Credits.

U.S. federal and state laws and regulations governing recognition of political parties and political organizations, campaign finance, political broadcasting and cablecasting, lobbying registration. Ballot access and voter registration. Ethical and strategic considerations (opportunities and constraints; benefits and drawbacks) related to rule construction. (Professor M. Braden) (Summer).

PMGT 6452. Digital Strategy. 3 Credits.

Development of an integrated digital strategy for use in advocacy and electoral campaigns. Introduction to the theoretical concepts, distinctive technologies, applied skills, and managerial challenges associated with digital campaigning. Search engine optimization, GPS, online payment systems, customizing back- and front-end systems to meet strategic goals and budget parameters, working with IT vendors and distance volunteers, legal and cultural considerations in US and other regimes, site rollout and scaling, security and privacy. (Professor TBD) (Fall).

PMGT 6454. Fundraising and Budgeting. 3 Credits.

Raising and spending money in political campaigns, referenda contests, issue advocacy, and lobbying efforts. Budgeting process, standard controls to check expenditures, accounting procedures, and general strategies for use in effective fundraising. (Professor N. Bocskor) (Spring).

PMGT 6456. Speechcraft. 3 Credits.

Analysis and techniques used in speechwriting and presentations for public officials and candidates. Managing the political optics and understanding a speech's visual context and non-verbal communication capabilities (Rose Garden, Oval Office, campaign stump speech, ceremonial occasion, congressional testimony). Modulating speaker style, tone, and pacing, and staging the speech for effect. (Professors D. McGroarty, R. Lehrman) (Fall).

PMGT 6458. Crisis Management. 3 Credits.

Management of crisis situations and defining moments in electoral, legislative, and public policy campaigns. Exploration of the causes and consequences of political scandals. Professional responsibilities and ethical considerations of crisis management and rapid response decisions. (Professor M. Edwards) (Spring).

PMGT 6460. Audience Research. 3 Credits.

Processes by which citizens acquire political information and make decisions in politics. Survey research uses in electoral campaigns and issue advocacy. Designing and drawing samples, constructing and pretesting questionnaires, modes of interviewing, financial implications, practical problems in selecting and monitoring polling organizations, and interpretation of data. Focus groups and small-sample interviews; relationship between qualitative and quantitative research; reliability and validity. (Professors R. Johnson, D. Cantor, B. Tringali, M. Ward) Prerequisites: PMGT 6403. (Fall).

PMGT 6462. Opposition Research. 3 Credits.

Practices and techniques associated with investigative opposition research. Public document and website searches, candidate tracking, and methods for information dissemination. Changes in practice as a result of technological innovations and a changing media environment. Professional responsibilities and ethics expected from opposition researchers. (Summer).

PMGT 6464. Influencing the Media. 3 Credits.

Organization, practices, and norms of the major media; media coverage of public officials, political campaigns, legislative battles, interest groups, and issues of public policy. Formulation of strategies for getting favorable news coverage for the issue or candidate and for ending a media crisis. (Professor L. Ellenbogen) (Fall).

PMGT 6466. Political Advertising. 3 Credits.

Strategies and techniques for using the various media (print, radio, television, cable, Internet) in political and advocacy campaigns, with emphasis on the use of television. Impact and uses of paid advertising; development of campaign messages; production, timing, and placement of television advertising; explanation of media markets. Students design print ads and brochures and produce a 30-second television spot. (Professor P. Fenn) (Fall).

PMGT 6468. Digital Advertising and Action. 3 Credits.

Strategies and techniques for developing and leveraging digital advertising for mobilization. Manage an effective online ad campaign from initial concept to creation and from targeting to measuring the results. Prepare, design, and launch a variety of online ad types, including search, social, display, and video. Analyze success or failure based on analytics and benchmarking. Prerequisites: PMGT 6452: Digital Strategy. (Spring).

PMGT 6470. Digital Content Creation. 3 Credits.

Developing and creating effective digital content that promotes campaign narratives and furthers strategic messages. Construct portfolios of original and aggregated digital media content. Skill development in infographics, video, GPS, photo collage, page and site architecture, and texts from 140 characters to blog posts and file attachments. Versioning for different communities, functionalities, and channels including mobile applications. Prerequisites: PMGT 6452: Digital Strategy. (Summer).

PMGT 6472. Maximizing Social Media. 3 Credits.

Creating and integrating owned digital platforms and social media assets for political persuasion and action. Cultivation of online political communities, moderating and curating outside-generated content, integration and alignment with campaign message; event, reputation and crisis management. Review of constraints and potentials intrinsic to specific social media sites (e.g. Facebook, Google, LinkedIn, Twitter). Prerequisites: PMGT 6452: Digital Strategy. (Spring).

PMGT 6474. Stereotypes and Political Strategy. 3 Credits.

Accounting for psychological constructs, social stereotypes, media framing, and the impression formation process in developing a political strategy. Review of empirical research; investigation of effective techniques or postures for overcoming biases; self-assessment of perceptual assumptions. (Summer).

PMGT 6476. Political Consulting. 3 Credits.

Management principles, technical procedures, and legal requirements for starting and running a political consulting business. Effective practices for gaining a positive reputation, sustaining profitability across the variable political environment, and engaging on the international front. Start-up funding, mergers and acquisitions, exit strategies. (Professors G. Nordlinger, L. Purpuro, M. Meissner) (Summer).

PMGT 6480. Washington Residency. 3 Credits.

Capstone experience equivalent to PMgt 6495 for students in the online Political Management program. Exposure to and interaction with political consultants, advocacy specialists, elected officials, and applied researchers in Washington, D.C. Integration of program curriculum toward an understanding of the federal political ecosystem and development of a robust political network. Restricted to Taken by PMGT online students in last or penultimate term, or with approval by instructor. (Fall, spring, and summer).

PMGT 6482. Applied Research Project. 3 Credits.

A research option for students in the online Political Management program. Development of a campaign-relevant research report and related communications on behalf of a mock political client. The report will describe the status quo of a political situation, analyze the factors and actors sustaining that status quo, identify what and who is potentially moveable in the direction the client seeks to go, and outline practical first steps a campaign can take in that direction. Restricted to For students in the PMGT online program; taken either in the penultimate or last term in the program. (Fall, spring, and summer).

PMGT 6490. Special Topics. 3 Credits.

Topic to be announced in the Schedule of Classes. (Fall, spring, and summer).

PMGT 6495. Political Power & Practice. 3 Credits.

Capstone seminar that develops and integrates knowledge of political strategies, tactics, and situational considerations, and applies that knowledge to advanced political problems. Topics include: gaining and wielding power, the complexity associated with making democracy work, conflict resolution, negotiation and bargaining skills, grappling with the consequences of winning and losing. Students to enroll during their last or penultimate term. (Professor L. Brown) (Spring and summer).

PMGT 6496. Independent Study. 0-3 Credits.

Independent research with a Political Management faculty member. Registration must be approved in advance by the supervising faculty member and the director of the political management program. (Fall, spring, and summer).

PMGT 6497. Graduate Internship. 0 Credits.

Limited to Political Management M.P.S. degree candidates. Experience at an organization focused on applied politics. (Fall, spring, and summer).

PMGT 6498. Thesis I. 3 Credits.

Master's degree candidates must apply to the program committee for thesis approval and have completed 24 credit hours with a 3.3 GPA. (Fall, spring, and summer).

PMGT 6499. Thesis II. 3 Credits.

Master's degree candidates must apply to the program committee for thesis approval and have completed 24 credit hours with a 3.3 GPA. Prerequisites: PMGT 6498. (Fall, spring, and summer).

PMGT 6501. Politics and Public Policy. 3 Credits.

Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis. Topics include political and policy decision making, actors, and process.

PMGT 6502. ConfrontManag&AllianceBldg. 3 Credits.**PMGT 6503. Communication Strategy. 3 Credits.**

Formulation of political communications strategies. Elements necessary to create, introduce, and maintain an effective political profile in issue advocacy campaigns, candidate elections, and legislative advocacy campaigns. Application of principles of research, advertising, and marketing to the political landscape.

PMGT 6504. PolMgt & StrategicGovernance. 3 Credits.**PMGT 6505. Politica de bases. 3 Credits.**

Use of microtargeting and database-layering technology to identify potential advocates. Motivational techniques to mobilize volunteers for political campaigns, lobbying efforts, and community advocacy. Techniques used by grassroots organizers to help corporations, unions, civic and nonprofit organizations, and special interest groups achieve strategic goals.

PMGT 6506. Practicum. 3 Credits.**PMGT 6507. Democracia y elecciones en LA. 3 Credits.**

This course will focus on the recent history of Latin America, underscoring the struggle to establish and consolidate democracy and the preeminence of elections as the legitimate process to select and replace authorities at the national, regional and local levels. The course will provide the student with concepts to understand the different types of democratic settings that exist in the region, that is the coexistence of fairly established and solid democracies, with low intensity democracies, and semi-authoritarian regimes, all of which utilize electoral processes to select public authorities. The main message of this course is that campaign designers need to understand and take a strategic advantage of the political context and the rules governing the political competition in order to obtain the most effective results.

PMGT 6508. Estrategia de campana LA. 3 Credits.

Organization of political campaigns. Strategic decisionmaking. Formulation of political communications strategies. Aspects necessary to introduce and maintain an effective political profile in the electoral campaigns in Latin America, including the specialized forms of communication which political professionals use to win support for their candidates. This course will be taught entirely in Spanish.

PMGT 6509. Las encuestas-America Latina. 3 Credits.

The use of survey research in campaigns. Quantitative and qualitative survey research for political management in Latin America. The proper use of polls; methodology and survey design; reviewing poll results; drawing conclusions and recommendations from polls; and the practical problems of administering and interpreting survey data of public opinion in Latin America. PMGT 6509 will be taught entirely in Spanish.

PMGT 6510. Organizacion y ejecucion-LA. 3 Credits.

Organizational choices facing campaign management teams in Latin America as they attempt to combine the resources and activities of a modern campaign into a winning effort.

PMGT 6511. Propoganda politica, La campan. 3 Credits.

The strategies, techniques, design and impact of paid political communications directed toward target audiences in Latin America, focusing upon the role of political advertising in a campaign, including radio, direct mail, print and internet, but with specific emphasis on television commercials.

PMGT 6512. Los medios, la politica-LA. 3 Credits.

The role of the media in the politics of Latin America. Who the media are, how they make their decisions, and how they influence outcomes in campaigns and other political situations. Strategic planning in dealing with the media as well as the particular dynamics that surround electronic, print, and the new media. Effective practices of media engagement. This course will be taught entirely in Spanish.

PMGT 6513. Comunicacion Politica,Gobernon. 3 Credits.

The course builds upon the Practicum course of the Certificate in Governance and integrates the two processes of politics: campaigning and governing. PMGT 6513 will be taught entirely in Spanish.

PMGT 6514. Manejo de Crisis. 3 Credits.

Manejo de Crisis (3 credits; offered Fall) Management of crisis situations and defining moments in electoral, legislative, and public policy campaigns. Exploration of the causes and consequences of political scandals. Professional responsibilities and ethical considerations of crisis management and rapid response decisions. (Fall).

POLITICAL PSYCHOLOGY (PPSY)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PPSY 6101. Fundamentals of Political Psychology. 3 Credits.

A review of the interdisciplinary field of political psychology; examination of psychological influences on political behavior at the level of the individual and small group; the psychology of leader-follower relationships; crisis decision making. (Fall).

PPSY 6102. Political Psychology Research Methods. 3 Credits.

Major research methods of political psychology, using classic articles in the field. Both quantitative methods, such as survey research and content analysis, and qualitative methods, such as personality profiling and comparative case studies, are considered. Prerequisite: PPSY 6101.

PPSY 6103. Political Violence and Terrorism. 3 Credits.

The origins and the sociopolitical and behavioral dynamics of political violence and terrorism. Major types of terrorism are differentiated. Implications for antiterrorist policy. The psychology of hostages. (Spring).

PPSY 6104. Independent Study and Research. 1-3 Credits.

Supervised research in a special topic in political psychology. Preparation of major research paper. Prerequisite: PPSY 6101, PPSY 6102.

POLITICAL SCIENCE (PSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSC 1000. Dean's Seminar. 3 Credits.**PSC 1001. Introduction to Comparative Politics. 3 Credits.**

Concepts and principles of comparative analysis, with an examination of politics and government in selected countries.

PSC 1001W. Intro to Comparative Politics. 0-3 Credits.

Concepts and principles of comparative analysis, with an examination of politics and government in selected countries.

PSC 1002. Introduction to American Politics and Government. 3 Credits.

Structure, powers, and processes of the American political system and the impact on public policy.

PSC 1002W. Intro-American Politics & Govt. 3 Credits.

Structure, powers, and processes of the American political system and the impact on public policy.

PSC 1003. Introduction to International Politics. 3 Credits.

Analysis of world politics, focusing on the role of nation-states and international organizations and on selected foreign policy issues.

PSC 1011. Introduction to Politics I. 6 Credits.

Role of personal and social values in politics. Problems in the Western (especially American) tradition of political science. Admission by special selection process.

PSC 1012W. Introduction to Politics II. 6 Credits.

Continuation of PSC 1011. Role of personal and social values in politics. Thinking outside the Western state: culture, nationalism, ethnic conflict, democratization, international conflict. Admission by special selection process.

PSC 2101. Scope and Methods of Political Science. 3 Credits.

Nature of political inquiry, approaches to the study of politics and government, empirical methods of research. Laboratory fee.

PSC 2105. Major Issues of Western Political Thought I. 3 Credits.

Foundations of Western political thought—Plato to Aquinas. (Fall).

PSC 2106. Major Issues of Western Political Thought II. 3 Credits.

History of political thought from the 16th through the late 19th century, as set forth in the works of representative thinkers. (Fall).

PSC 2106W. Major Issues of Western Political Thought II. 3 Credits.

History of political thought from the 16th through the late 19th century, as set forth in the works of representative thinkers. Writing intensive. (Spring).

PSC 2107. 20th-Century Political Thought. 3 Credits.

Recent Western political thought; analysis and critique of the legacies of modern political theories and ideologies.

PSC 2108. Freedom and Equality. 3 Credits.

Case analysis of major ideas related to freedom and equality in the Western political tradition.

PSC 2110. American Political Thought. 3 Credits.

Political thought in the U.S. from colonial times to the present as seen through major representative writings.

PSC 2120. Freedom in American Thought and Popular Culture. 0-3 Credits.**PSC 2120W. Freedom in American Thought and Popular Culture. 0-3 Credits.**

America was founded on the premise of providing freedom to its people. But what, exactly, is freedom? The question has been debated in America since its founding and continues today; this course examines varied answers provided by American political thought and popular culture. Writing intensive. (Same as AMST 2120) (Fall).

PSC 2211. State and Urban Politics. 3 Credits.

Comparative analysis of context, institutions, processes, and policies of state and urban political systems. Prerequisite: PSC 1002.

PSC 2212. State and Urban Policy Problems. 3 Credits.

Selected issues in state and urban policymaking, with emphasis on urban and metropolitan settings. Prerequisite: PSC 1002.

PSC 2213. Judicial Politics. 3 Credits.

An examination of judicial process and behavior. Emphasis on judicial selection, decision making, interaction with the political environment, and impact and implementation of decisions. Prerequisite: PSC 1002.

PSC 2214. U.S. Constitutional Law and Politics I. 3 Credits.

Separation of powers, federal-state relationships, economic regulation. Prerequisites: PSC 1002. (Fall).

PSC 2215. U.S. Constitutional Law and Politics II. 3 Credits.

Political and civil rights. Prerequisites: PSC 1002. (Spring).

PSC 2216. The American Presidency. 3 Credits.

Examination of the politics of presidential selection, the authority of the contemporary institution, the mechanisms and processes for formulating public policy, and the influences of personality on performance in office. Prerequisite: PSC 1002.

PSC 2217. Executive Branch Politics. 3 Credits.

Basic concepts in public administration; influence of bureaucratic politics on policy formulation and implementation. Prerequisite: PSC 1002. Same as PPPA 2117.

PSC 2218. Legislative Politics. 3 Credits.

Theory, structure, and process of the U.S. Congress, with emphasis on elections, party organization, committees, and floor procedure, in the context of executive-legislative relations and interest-group activities. Prerequisite: PSC 1002.

PSC 2218W. Legislative Politics. 3 Credits.

Theory, structure, and process of the U.S. Congress, with emphasis on elections, party organization, committees, and floor procedure, in the context of executive-legislative relations and interest-group activities. Writing intensive. Prerequisites: PSC 1002. (Fall).

PSC 2219. Political Parties and Interest Groups. 3 Credits.

Role of parties as a linkage between mass preferences and government policies. Organization, nominations, voting, and activities in legislative and executive branches. Prerequisite: PSC 1002.

PSC 2220. Public Opinion. 3 Credits.

How public opinion is measured, how it is shaped, and its consequences for policymaking. Prerequisite: PSC 1002.

PSC 2222. Science, Technology, and Politics. 3 Credits.

Multiple impacts of scientific and technological developments on the political systems. Discussion of public policies for support, use, and control of science and technology. Prerequisite: PSC 1002.

PSC 2223. Campaigns and Elections. 3 Credits.

Examination of the various forms of American political participation in electoral and governmental politics and their effects on the political process. Prerequisite: PSC 1002.

PSC 2224. Issues in Domestic Public Policy. 3 Credits.

Examination of the decision-making process and the substance of various issues in domestic public policy in such areas as crime, economics, education, energy, the environment, poverty, and health. Prerequisite: PSC 1002.

PSC 2225. Women and Politics. 3 Credits.

An examination of the role and impact of women in politics, including women's interests and access to the political system; specific public policy issues with a particular focus on the role of women. Prerequisite: PSC 1002.

PSC 2228. Media, Politics, and Government. 3 Credits.

Exploration of the role played by communication, principally through the mass media, in the conduct of government and the making of public policy. Same as SMPA 3428. Prerequisite: PSC 1002.

PSC 2229. Media and Politics. 3 Credits.

The impact of the media on American politics, including the nature of coverage of political issues and campaigns, dynamics of selecting and presenting news stories, and consequences of media messages for public opinion and action. Prerequisite: PSC 1002.

PSC 2330. Comparative Politics of Western Europe. 3 Credits.

Comparative political analysis with primary focus on the principal states of Western Europe. Prerequisite: PSC 1001.

PSC 2331. Comparative Politics of Central and Eastern Europe. 3 Credits.

Specific countries vary, to include nations of central and Eastern Europe and/or the newly independent states of the former Soviet Union. Prerequisite: PSC 1001.

PSC 2332. European Integration. 3 Credits.

The history of the European Union, its accomplishments as an international actor, and the vibrant debates over its future. Prerequisite: PSC 1001.

PSC 2334. Global Perspectives on Democracy. 3 Credits.

International experiences with the historical evolution and current nature of democratic political systems. Prerequisite: PSC 1001.

PSC 2336. State-Society Relations in the Developing World. 3 Credits.

Historically informed exploration of enduring issues of concern in state-society relations, with an empirical focus on selected countries and regions of the developing world. Prerequisite: PSC 1001.

PSC 2337. Development Politics. 3 Credits.

An examination of how and why political systems develop the way they do. Why do some countries develop into democracies, while others become authoritarian? How do class conflict, the nature of the elite, and the political culture affect the development of political institutions? Prerequisite: PSC 1001.

PSC 2338. Nationalism. 3 Credits.

Causes and the effects of nationalism, covering cases from around the world. Prerequisite: PSC 1001.

PSC 2366. State-Society Relations in the Developing World. 3 Credits.

An examination of political institutions, processes, and issues of Russian politics. Prerequisite: PSC 1001.

PSC 2367. Human Rights. 3 Credits.

Human rights theory, the various movements for human, religious, civil, political, and other rights. Prerequisite: PSC 1001.

PSC 2367W. Human Rights. 3 Credits.

Human rights theory, the various movements for human, religious, civil, political, and other rights. Writing intensive. Prerequisites: PSC 1001. (Fall).

PSC 2368. Politics in the Two Koreas. 3 Credits.

An examination of political institutions, processes, and issues in South Korea and North Korea as well as in inter-Korean relations and major-power involvement in peninsular affairs.

PSC 2369. Comparative Politics of South Asia. 3 Credits.

A comparative examination of colonialism, economic development, and identity politics in South Asia. Prerequisite: PSC 1001.

PSC 2370. Comparative Politics of China and Northeast Asia. 3 Credits.

Political institutions and processes of China (including Taiwan), Japan, and Korea since World War II. Influence of indigenous traditions and foreign contacts. Prerequisite: PSC 1001.

PSC 2371. Politics and Foreign Policy of China. 3 Credits.

An examination of political institutions, processes, history, and issues of Chinese politics and foreign policy. Prerequisite: PSC 1001.

PSC 2373. Comparative Politics of Southeast Asia. 3 Credits.

Political forces, processes, and outcomes, using empirical examples from Southeast Asia. Prerequisite: PSC 1001.

PSC 2374. Politics and Foreign Policy of Japan. 3 Credits.

An examination of political institutions, processes, and issues of Japanese politics and foreign policy. Prerequisite: PSC 1001.

PSC 2377. Comparative Politics of the Middle East. 3 Credits.

Politics of the eastern Arab states, Turkey, Iran, and Israel. Prerequisite: PSC 1001.

PSC 2377W. Comparative Politics of the Middle East. 3 Credits.

Politics of the eastern Arab states, Turkey, Iran, and Israel. Writing intensive. Prerequisites: PSC 1001. (Fall).

PSC 2379. Politics and Foreign Policy of Israel. 3 Credits.

Examination of the institutions, processes, and issues of Israeli politics and foreign policy. Prerequisite: PSC 1001.

PSC 2381. Comparative Politics of Middle and Southern Africa. 3 Credits.

Comparative analysis of political systems in selected countries of non-Mediterranean Africa. Prerequisite: PSC 1001.

PSC 2383. Comparative Politics of Latin America. 3 Credits.

The politics of selected countries in South America, Central America, and the Caribbean. Emphasis on democratization. Prerequisite: PSC 1001.

PSC 2439. International Political Economy. 3 Credits.

Analysis of the political aspects of global economic relationships, focusing on such issues as economic hegemony, interdependence, trade relations, development assistance, multinational corporations, and the role of international organizations. Prerequisite: PSC 1003.

PSC 2440. Theories of International Politics. 3 Credits.

Exploration of alternative theoretical approaches to understanding world politics in its historical and contemporary dimensions. Prerequisite: PSC 1003.

PSC 2442. International Organizations. 3 Credits.

Development and operations of international organizations working in the areas of collective security, peacekeeping, trade, finance, environment, human rights. Prerequisite: PSC 1003.

PSC 2442W. International Organizations. 3 Credits.

Development and operations of international organizations working in the areas of collective security, peacekeeping, trade, finance, environment, human rights. Writing intensive. Prerequisites: PSC 1003. (Fall).

PSC 2444. Public International Law. 3 Credits.

Survey of essential principles and concepts of public international law through case analysis and with reference to political factors. Prerequisite: PSC 1003.

PSC 2446. U.S. Foreign Policy. 3 Credits.

Survey of essential principles and concepts of public international law through case analysis and with reference to political factors. Prerequisite: PSC 1003.

PSC 2449. International Security Politics. 3 Credits.

Overview of international security issues. Insights from a variety of historical periods and theoretical approaches inform the analysis. Prerequisite: PSC 1003.

PSC 2449W. International Security Politics. 3 Credits.

Overview of international security issues. Insights from a variety of historical periods and theoretical approaches inform the analysis. Writing intensive. Prerequisite: PSC 1003. (Fall).

PSC 2461. European-Atlantic Relations. 3 Credits.

International politics of the North Atlantic area, the European Union, and U.S.-European relations. Prerequisite: PSC 1003.

PSC 2468. Post-Soviet Foreign Policy. 3 Credits.

External problems and policies of Russia and the other successor states of the former USSR (especially the Baltics, Ukraine, and southern rim of the former Soviet Union). Prerequisite: PSC 1003.

PSC 2475. International Relations of East Asia. 3 Credits.

Analysis of the foreign policies of selected East Asian countries and the foreign policies of major powers toward the region. Prerequisite: PSC 1003.

PSC 2476. The Arab-Israeli Conflict. 3 Credits.

Origins, evolution, and issues of the Arab-Israeli conflict. Prerequisite: PSC 1003.

PSC 2478. International Relations of the Middle East. 3 Credits.

Analysis of the regional and international relations of the Middle East. Prerequisite: PSC 1003.

PSC 2482. African International Politics. 3 Credits.

Analysis of interstate relations in Africa and of selected aspects of African relations with the outside world. Prerequisite: PSC 1003. Recommended prerequisite: PSC 2381.

PSC 2484. International Relations of Latin America. 3 Credits.

Emphasis on U.S. foreign policy toward Latin America. Prerequisite: PSC 1003.

PSC 2987. Internship: Political Science. 1-3 Credits.

Study of political behavior and institutions through internship experience. Open to departmental majors only. Admission requires departmental approval and junior standing.

PSC 2988. Internship in Law & Society. 3 Credits.**PSC 2990. Selected Topics. 3 Credits.****PSC 2990W. Selected Topics. 3 Credits.****PSC 2991. Special Topics in Political Thought. 3 Credits.****PSC 2992. Special Topics in American Politics and Government. 3 Credits.**

Prerequisite: PSC 1002.

PSC 2993. Special Topics in Comparative Politics. 3 Credits.

Prerequisite: PSC 1001.

PSC 2994. Special Topics in International Relations. 3 Credits.

Prerequisite: PSC 1003.

PSC 2994W. Special Topics in International Relations. 3 Credits.

Writing intensive. Prerequisites: PSC 1003. (Fall).

PSC 3192W. Proseminar: Political Science. 3 Credits.

Examination of selected problems in political science.

Admission restricted to political science majors in their junior or senior year. May be repeated once for credit.

PSC 4991. Independent Study. 1-3 Credits.

For departmental majors. Prerequisite: senior standing, 15 credit hours of upper-division political science courses, and approval of the undergraduate program advisor and the faculty member who will direct the study.

PSC 6103. Approaches to Public Policy Analysis. 3 Credits.

Primarily for master's students. Empirical and normative foundations of systematic policy analysis: concepts, theories, models, issues, strengths, limitations, and uses and misuses in the policy process.

PSC 6113. The Constitution: History and Ideas. 3 Credits.

With a focus on the history and ideas that influenced James Madison, consideration of ideas that formed the common heritage of all the framers of the Constitution. The separate traditions of liberty that were fused together in the Constitution. Early changes in American society that placed one of those traditions at the center of America's self-understanding.

PSC 6114. Theories of Judicial Review. 3 Credits.

How and why the U.S. Supreme Court interprets the Constitution. The theory behind the practice of judicial review. Consideration of such questions as whether the Constitution intended judicial review and how the two wings of today's Court justify their own position on judicial review.

PSC 6330. Comparative Government and Politics. 3 Credits.

Open to Elliott School students only. Examination of basic approaches to comparative politics.

PSC 6333. Comparative Politics of Russia and Eurasia. 3 Credits.

Comparative analysis of politics in the post-Soviet region. Theoretical and methodological approaches to understanding important issues, frequently including democracy/autocracy, ethnic conflict, political economy, center-periphery relations, and state building.

PSC 6338. U.S. Foreign Economic Policy. 3 Credits.

Exploration of ideas and issues involved in U.S. foreign economic policy, including relationship of economic and security issues, interdependence, protectionism, role of the dollar, industrial policy, and the debt crisis.

PSC 6345. Comparative Foreign Policy. 3 Credits.

The relationship of international actors with one another and with their external environment analyzed in a comparative framework. Focus on nation-states as well as non-state actors, such as international organizations. Differences and similarities in policies on economics, diplomacy, security, and global issues.

PSC 6346. The Politics of U.S. Foreign Policy. 3 Credits.

Patterns and problems in contemporary U.S. foreign policy. Special attention given to the domestic political factors shaping foreign policy.

PSC 6347. U.S. Foreign Policy Traditions. 3 Credits.

Contemporary debate about the substance of American foreign policy through the lens of alternative theoretical approaches to the study of international relations. Classical realist (national interest), neorealist (balance of power), neoliberal (international interdependence and institutions), and constructivist (national identity) interpretations are compared.

PSC 6348. Politics of U.S. National Security Policy. 3 Credits.

Examines competing theoretical approaches to the study of national security policy and tests these on a variety of substantive issue areas in the United States. (May include such topics as nuclear non-proliferation, responses to regional conflicts, definition of new security goals, etc.).

PSC 6349. International Security Politics. 3 Credits.

Overview of the major theoretical debates in international security. How different theoretical approaches inform policy decisions and options.

PSC 6350. Foreign Policy Analysis—Selected Topics. 3 Credits.

Analysis of U.S. foreign policy toward selected world regions.

PSC 6351. Civil-Military Relations. 3 Credits.

Substantive and theoretical issues and debates in the study of civil-military relations.

PSC 6360. Western European Politics. 3 Credits.

Examination of the principal characteristics of the British, French, German, and Italian political systems, comparing their institutional and behavioral adaptations to the problems of advanced industrial democracies.

PSC 6361. Politics of European Integration. 3 Credits.

The origins, institutions, and politics of West European integration, with emphasis on theories of regional integration and the development of the European Union.

PSC 6362. Nation-Building in the Balkans. 3 Credits.**PSC 6364. Comparative Governments and Politics of Central And Eastern Europe. 3 Credits.**

Comparative analysis of domestic political processes and policies in Central and Eastern Europe.

PSC 6366. Government and Politics of Russia. 3 Credits.

The politics and development of the Russian state.

PSC 6367. Post-Soviet Politics. 3 Credits.

How the study of former Soviet countries contributes to major debates in comparative politics. Focus includes regimes, political economy, revolutions, ethnic politics, nationalism.

PSC 6368. Japanese Politics and Foreign Policy. 3 Credits.

Japan's path to modernity and the impact its pattern of development has had on the nation's democratization, political economy, and political institutions in the post-1945 period.

PSC 6370. Politics of China I. 3 Credits.

Readings and discussion of the political dynamics and policy process in contemporary China.

PSC 6371. Politics of the PRC 2. 3 Credits.

Research seminar on selected topics in Chinese politics, using official and other primary sources. Prerequisites: PSC 6370 or permission of instructor. (Fall).

PSC 6372. Foreign Policy of the PRC. 3 Credits.

Readings and research on the main approaches to analyzing China's foreign policy and foreign relations.

PSC 6373. Political Economy of Industrializing Asia. 3 Credits.

Comparative analysis of the relationship between economic interests and politics in East and Southeast Asia. Emphasis on industrializing economies and their integration into global trade and investment networks.

PSC 6374. Korean Politics. 3 Credits.

An examination of Korean politics from the perspectives of four major research areas: authoritarian regime and economic growth; democratic transition and consolidation; the Asian financial crisis and its consequences; and the two Koreas and international relations.

PSC 6377. Comparative Politics of the Middle East. 3 Credits.

Readings and research on selected problems of the governments and politics of the Middle East.

PSC 6379. Government and Politics of Africa. 3 Credits.

Major theories and themes of African politics considering the context shaping political and economic reforms, formal and informal institutions, and prospects for political reform.

PSC 6383. Comparative Politics of Latin America. 3 Credits.

Readings and discussion on the politics of selected countries in South America, Central America, and the Caribbean. Emphasis on the possibilities for democracy and revolution.

PSC 6388. Topics in Comparative Politics. 3 Credits.**PSC 6390. Politics and Culture. 3 Credits.****PSC 6439. International Political Economy. 3 Credits.**

Research seminar exploring alternative theoretical approaches to the study of international political economy and their application to the explanation and interpretation of historical and contemporary events in world political and economic affairs. Primarily for Elliott School degree candidates.

PSC 6440. Theory-International Relations. 3 Credits.

Open to Elliott School students only. Theories of international relations.

PSC 6442. Politics and Practice of International Institutions. 3 Credits.

The politics of international institutions in the areas of collective security, peace keeping, trade, money, development, environment, human rights.

PSC 6444. Politics of International Law. 3 Credits.

The political sources and consequences of international law and norms.

PSC 6456. Origins/Major Wars & Terrorism. 3 Credits.

An examination of the origins of major wars, including terrorism, from the 18th to the 20th centuries from the theoretical perspectives of realism, liberalism, and constructivism/identity.

PSC 6457. Arms Control & Disarmament. 3 Credits.

Major issues and trends in the postwar development of U.S. arms control and disarmament policy.

PSC 6465. The International Politics of Central and Eastern Europe. 3 Credits.

Major historical, political, social, and regional factors that have shaped the interwar, World War II, and postwar evolution of Eastern Europe; emphasis on foreign relations with outside powers and on regional East-West contacts.

PSC 6467. Asian Security. 3 Credits.

An examination of the major issues in Asian Security using various theoretical perspectives involving a mix of political science and policy analysis.

PSC 6475. International Politics of East Asia. 3 Credits.

Foreign policies and international behavior of the regional states (especially China, Japan, and Vietnam) and the extraregional powers (especially the U.S. and Russia).

PSC 6476. The Arab-Israeli Conflict. 3 Credits.

Readings and research on the origins, evolution, and issues of the Arab-Israeli conflict.

PSC 6478. International Relations of the Middle East. 3 Credits.

Readings and research on the regional and international relations of the Middle East.

PSC 6484. International Relations of Latin America. 3 Credits.

Readings and discussion on U.S.-Latin American relations and the foreign policies of selected states.

PSC 6489. Topics in International Relations. 3 Credits.**PSC 6987. Legal Internship. 3 Credits.**

Study of the interior workings of legal institutions and related organizations through an approved internship with a court, law firm, legal advocacy group, public defender's office, or legal think tank. A research paper is required. (Fall, spring, and summer).

PSC 6996. Reading. 3 Credits.

Limited to graduate degree candidates. Written permission of instructor required.

PSC 6997. Research. 3 Credits.

Limited to graduate degree candidates. Written permission of instructor required.

PSC 6998. Thesis Research. 3 Credits.**PSC 6999. Thesis Research. 3 Credits.****PSC 8101. Introduction to Empirical Political Analysis. 3 Credits.**

Statistical foundations of empirical political analysis and computer applications. Basic probability theory, exploratory and descriptive data analysis, statistical inference, and introduction to linear regression. Laboratory fee.

PSC 8102. Empirical Political Analysis. 3 Credits.

Techniques of social science data analysis. Model building, estimation, and interpretation. Linear models and extensions. Introduction to discrete choice models. Prerequisite: PSC 8101 or permission of instructor.

PSC 8103. Approaches to Policy Analysis. 3 Credits.

Primarily for doctoral students. Empirical and normative foundations of systematic policy analysis: concepts, theories, models, issues, strengths, limitations, and uses and misuses in the policy process.

PSC 8104. Qualitative Research Methods. 3 Credits.

Theoretical, practical, and ethical aspects of conducting qualitative research.

PSC 8105. Readings in Political Theory. 3 Credits.

Selected major works, both ancient and modern, that illuminate basic problems and questions of political theory.

PSC 8106. Topics in Political Theory. 3 Credits.

Advanced readings and group discussions. Analysis and interpretation of selected concepts and schools of thought.

PSC 8107. Modern Political Thought and Ideologies. 3 Credits.

Analysis of some main currents in modern political thought and ideologies.

PSC 8108. Craft of Political Inquiry. 3 Credits.

Logic of inquiry in political science: theories of knowledge, inference, and research methods. (Spring, odd years).

PSC 8109. Systematic Inquiry and Research Design. 3 Credits.

Study design, data collection, and models of analysis in political science.

PSC 8120. Maximum Likelihood Estimation. 3 Credits.

Introduction to maximum likelihood estimation interpretation of non-linear statistical models. Statistical inference, appropriate use, and presentation and interpretation of results.

PSC 8122. Logitudinal Analysis. 3 Credits.

Examination of two classes of statistical models for longitudinal data—(1) models for time-series, cross-sectional and panel data and (2) modeling event history (i.e., duration, survival, hazard).

PSC 8124. Multilevel Modeling. 3 Credits.

Statistical issues and models for multilevel (hierarchical) data structures, including the variance components, random intercept, and random coefficient models. Handling cross-level interactions.

PSC 8130. Game Theory. 3 Credits.

Essential elements of the formal analysis of politics. Static and dynamic games with both complete and incomplete information. Focus on key concepts in social science inspired by game theory.

PSC 8185. Topics in Empirical and Formal Political Analysis. 3 Credits.

Selected topics in quantitative political methodology and formal political theory with varying emphasis on maximum likelihood estimation, nonlinear models, causal inference, formal theories, and mathematical/computational tools for the social sciences. May be repeated for credit. Prerequisite: PSC 8102 .

PSC 8187. Selected Topics in Political Theory. 3 Credits.

In-depth coverage of significant issues in political theory, including such topics as justice, toleration, and political community. For advanced students.

PSC 8210. American Political Process. 3 Credits.

A survey of American political institutions, processes, and behavior.

PSC 8211. Urban Politics. 3 Credits.

Comparative analysis of the context, institutions, processes, and policies of urban political systems.

PSC 8212. Urban Policy Problems. 3 Credits.

Analysis of public policy issues confronting urban governments; emphasis on the theoretical roots and empirical impact of past and present programs in such areas as housing, education, poverty, and crime.

PSC 8213. Judicial Politics. 3 Credits.

Introduction to the literature of judicial process and behavior studies; specific focus on selected topics. Emphasis on the major subfields of law, courts, and judicial process.

PSC 8215. Law, Politics, and Society. 3 Credits.

Role of the judiciary in policy formulation; emphasis on the U.S. Supreme Court and civil liberties issues. (Fall).

PSC 8216. American Presidency. 3 Credits.

Personalized and institutionalized aspects of the presidency, with particular emphasis on the politics of contemporary policymaking.

PSC 8217. Executive Branch Politics. 3 Credits.

Structure and operation of governmental bureaucracy with particular emphasis on the politics of formulating and implementing public policy.

PSC 8218. Legislative Politics. 3 Credits.

Theory, structure, and process of the U.S. Congress, with emphasis on member-constituency relations, individual and collective decision making, party and committee activities, executive-legislative relations, and interest-group activities.

PSC 8219. Political Parties and Elections. 3 Credits.

Nature and functions of American political parties: organizational status, nominating and electoral politics, and role in governing.

PSC 8220. Public Opinion and Political Psychology. 3 Credits.

Sources and dynamics of public opinion and political socialization.

PSC 8221. Interest-Group Politics. 3 Credits.

Theory, structure, and activities of interest groups in American politics.

PSC 8226. Politics and Organizations. 3 Credits.

Theoretical approaches to understanding organizational behavior and change; applications to specific political problems in U.S., international, and comparative politics.

PSC 8229. Politics and Public Policy. 3 Credits.

Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis.

PSC 8286. Selected Topics in American Politics. 3 Credits.

In-depth coverage of significant theoretical and empirical issues in American politics, including such topics as political behavior, electoral politics, and race and politics. For advanced students. (Offered as the demand warrants).

PSC 8331. Advanced Theories of Comparative Politics. 3 Credits.

Major concepts, methods, and theoretical debates in comparative politics, including cultural, rational, and institutional approaches.

PSC 8334. Democracy and Democratization in Comparative Perspective. 3 Credits.

Theoretical approaches to processes of democratization. Evaluation of cultural, economic, institutional, and international-actor approaches. Case analysis of recently transitioned or transitioning nations. Primarily for Ph.D. students in political science.

PSC 8337. Theories of Political Development. 3 Credits.

Examination of how and why political systems develop the way they do. Why do some countries develop into democracies, while others become authoritarian? How do class conflict, the nature of the elite, and the political culture affect the development of political institutions?.

PSC 8338. Nationalism and Nation-Building. 3 Credits.**PSC 8340. Authoritarianism. 3 Credits.****PSC 8341. Theories of Ethnic Politics. 3 Credits.**

Focus on cutting-edge interdisciplinary theories of ethnicity's role in politics. Ethnicity's relationship to democracy, economy, psychology, conflict, and solutions. Cases worldwide.

PSC 8388. Selected Topics in Comparative Politics. 3 Credits.

In-depth coverage of significant theoretical and empirical issues in comparative politics, including such topics as democratization, the politics of development, the role of the state in advanced industrial societies, gender and ethnicity, and the politics of nationalism. (Offered as the demand warrants).

PSC 8441. Advanced Theories of International Politics. 3 Credits.

Perspectives examined range from realism to critical theory and focus upon a variety of explanatory variables.

PSC 8450. Topics-International Relations. 3 Credits.

PSC 8452. Theories of International Security. 3 Credits.

Focus on conflict in different systems and scenarios and on causes and consequences of different strategies. The role of ethics in international security.

PSC 8453. Advanced Theories of International Political Economy. 3 Credits.

Major theories of political economy, from classical perspectives on problems of international cooperation to modern treatments of trade, finance, investment, and regulation.

PSC 8454. Advanced Theories of Foreign Policy Decision Making. 3 Credits.

PSC 8460. Military Intervention. 3 Credits.

Theoretical and empirical approaches to the study of military interventions. The challenges of designing political science research on a complex and policy-relevant topic like military intervention.

PSC 8461. Military Effectiveness. 3 Credits.

Theories of military effectiveness in conventional wars. Case studies of several conflicts and brief exploration of effectiveness in unconventional wars.

PSC 8462. Civil War. 3 Credits.

Theories of causes, conduct, and termination of civil wars. Consideration of violence against civilians, rebel recruitment, counterinsurgency, and civil war outcomes.

PSC 8489. Selected Topics in International Politics. 3 Credits.

In-depth coverage of significant theoretical and empirical issues in international politics, including such topics as comparative foreign policy, ethics and norms in international politics, the politics of military intervention, and theories of security in a post-Cold War environment. For advanced students. (Offered as the demand warrants).

PSC 8997. Advanced Reading. 1-3 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

PSC 8998. Advanced Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

PSC 8999. Dissertation Research. 2-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

PORTUGUESE (PORT)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PORT 1000. Dean's Seminar. 3 Credits.

PORT 1001. Basic Portuguese I. 4 Credits.

Handling the immediate context of daily experience in spoken and written Portuguese: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee.

PORT 1002. Basic Portuguese II. 4 Credits.

Speaking and writing in Portuguese about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: PORT 1001 . Laboratory fee.

PORT 1003. Intermediate Portuguese I. 3 Credits.

Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (repeating or relaying messages, giving reports, summarizing). Prerequisite: PORT 1002 . Laboratory fee.

PORT 1004. Intermediate Portuguese II. 3 Credits.

Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: PORT 1003 . Laboratory fee.

PORT 1012. Intensive Basic Portuguese. 8 Credits.

Equivalent to PORT 1001, PORT 1002. Laboratory fee.

PORT 2005. Composition and Conversation. 3 Credits.

Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: PORT 1004. Laboratory fee.

PORT 2006. Applied Portuguese Grammar. 3 Credits.

Intensive study of Portuguese grammatical construction in oral and written form, including consideration of relationships across the history of the language and its grammar, linguistics, and dialectology. Prerequisite: PORT 2005.

PORT 2010. Accelerated Portuguese. 3 Credits.

An intensive course designed for speakers of another Romance language to develop competence quickly in spoken and written Portuguese. Laboratory fee.

PORT 3100. The Lusophone Atlantic World. 3 Credits.

A wide-ranging cross-cultural examination of the Portuguese-speaking Atlantic world, which includes extensive areas of the Americas and West Africa. How Lusophone Atlantic populations relate to those of other areas, such as Mozambique and former Portuguese India, where Portuguese-based Creoles are or were spoken. Prerequisite: PORT 2006 or consent of instructor.

PORT 3101. Culture and Civilization of the Sephardim. 3 Credits.

Focus on the cultural and religious background of the Jews of Spain and Portugal both before and since their expulsion/forced conversion in the late 15th century. Narrative and documentary histories from Sephardic cultures in the Iberian Peninsula and in the Diaspora are discussed. Prerequisite: PORT 2006 or consent of instructor.

PORT 3600. Topics in Lusophone Literature and Culture. 3 Credits.

May be repeated for credit provided the topic differs. Prerequisite: PORT 2006 or consent of instructor.

PORT 4800. Independent Study. 1-3 Credits.

PROF STDIES/MIDDLE-GRD SCIENCE (PSMS)

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PSMS 6221. CognitiveNeurosci for Sci Educ. 3 Credits.**PSMS 6222. Physcl Scie fr MidlGrd Tchrs I. 4 Credits.****PSMS 6223. Phys Sci fr MidGrd Tchrs II. 4 Credits.****PSMS 6224. Life Scien fr MidGrd Tchrs I. 4 Credits.****PSMS 6225. Life Scien fr MidGrd Tchrs II. 4 Credits.****PSMS 6226. Earth Scie fr MidGrd Tchrs I. 4 Credits.****PSMS 6227. Earth Scie fr MidGrd Tchrs II. 4 Credits.**

PROF STUD MIDDLE-SCHOOL MATH (PSMM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSMM 6221. HistofMath/Middle-School Instr. 3 Credits.**PSMM 6222. Math for MiddleSchool Teachers. 3 Credits.****PSMM 6223. NumberTheory/MidleSchlTeachers. 3 Credits.****PSMM 6224. ProbiltyStat/MidleSchlTeachers. 3 Credits.****PSMM 6225. Geometry/MiddleSchoolTeachers. 3 Credits.****PSMM 6226. HigherAlgebra/MdlSchlTeachers. 3 Credits.****PSMM 6227. LinAlgMatrxThry/MdlSchlTeachrs. 3 Credits.****PSMM 6228. RealAnlys&Trig/MdlSchlTeachrs. 3 Credits.****PSMM 6229. Math Argumentation & Reasoning. 1 Credit.****PSMM 6230. Standards-based Math instruct.. 3 Credits.****PSMM 6231. Math Learning & Assessment. 1 Credit.****PSMM 6232. Readings on Learning Math. 1 Credit.****PSMM 6233. Capstone:Learn/Teach Math. 3 Credits.**

PROF STUDIES LANDSCAPE DESIGN (PSLD)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSLD 6100. Landscape Graphics. 1 Credit.**PSLD 6201. Introduction to Design. 2 Credits.****PSLD 6202. Site Analysis. 2 Credits.****PSLD 6203. Site Engineering. 2 Credits.**

PSLD 6204. Construction Methods and Materials. 2 Credits.

PSLD 6205. Digital Representation for Landscape Design. 2 Credits.

PSLD 6212. History of Landscape Design. 2 Credits.

PSLD 6213. Contemporary Themes in the Landscape. 1 Credit.

Current thinking and trends in shaping the landscape.

PSLD 6221. Landscape Plants for Fall. 2 Credits.

PSLD 6223. Landscape Plants for Spring. 2 Credits.

PSLD 6225. Landscape Plants for Summer. 2 Credits.

PSLD 6229. Herbaceous Plants. 1 Credit.

PSLD 6231. Site Design Studio. 4 Credits.

The interaction of the design concept and the various factors and circumstances that dictate or moderate that particular concept in the garden design process. The process that transforms abstract design principles, ordering principles, and spatial organizations previously learned into a specific garden design. Graphics demonstrations and exercises to further develop visual and graphic communication skills.

PSLD 6236. Planting Design Studio. 4 Credits.

PSLD 6240. Comprehensive Project. 2 Credits.

PSLD 6260. Introduction to Sustainable Design. 2 Credits.

PSLD 6261. Ecology of the Built Environment. 2 Credits.

PSLD 6262. Tools for Sustainable Design. 3 Credits.

PSLD 6264. Native Plants I. 2 Credits.

Identification and use of native plant species that are sustainable due to their evolution as part of its local ecosystem.

PSLD 6265. Native Plants II. 1 Credit.

Continuation of PSLD 6264. Identification and use of native plant species that are sustainable due to their evolution as part of its local ecosystem.

PSLD 6266. Ecological Restoration. 1 Credit.

PSLD 6268. Sustainable Design Methods. 2 Credits.

PSLD 6269. Sustenance and the Landscape. 2 Credits.

PSLD 6270. Sustainable Design Charrette. 3 Credits.

PROF STUDIES LAW FIRM MGMT (PSLM)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSLM 6201. Theories, Principles, and Practices of Law Firm Management. 6 Credits.

PSLM 6202. Applying Strategic & Bus Planning. 3 Credits.

Team projects using a simulated law firm case study, including practice group and office profitability analysis, market assessments, creation of strategic plans, and merger analyses. Prerequisite: PSLM 6201.

PSLM 6203. Practical Applications of Law Firm Management. 3 Credits.

Presentation of strategic plans, analyses, and recommendations developed in PSLM 6202 before a panel of faculty, managing partners, and law firm professionals. Prerequisite: PSLM 6202.

PSLM 6204. Principles of Leadership. 6 Credits.

An intensive course focused on theories and principles of leadership within firms, including leading organizational change. Prerequisite: PSLM 6203.

PSLM 6205. Application of Leadership Frameworks. 3 Credits.

Concepts and frameworks that highlight leadership roles in firms. Prerequisite: PSLM 6204.

PSLM 6206. Strategic Leadership for Sustainability and Change. 3 Credits.

Integration of the content of PSLM 6204 and PSLM 6205 through a focus on strategic leadership. Prerequisite: PSLM 6205.

PSLM 6207. Process Improvement in Law Firms. 3 Credits.

Development of charters for major projects in law firms, applying skills pertaining to managing change and conflict. Prerequisite: PSLM 6206.

PSLM 6208. Legal Technology and Knowledge Management. 3 Credits.

Key elements of knowledge management, including development of a knowledge management strategy. Prerequisite: PSLM 6207.

PROF STUDIES IN MOLECULAR BIOL (PSMB)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
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PSMB 4152. Entrprnshp/Tech Venture Cr. 4 Credits.

PSMB 6251. A Primer on Computations. 1 Credit.

PSMB 6252. Scientific Computation and Modeling. 3 Credits.

PSMB 6253. Principles of Biomedical Instrumentation. 3 Credits.

PSMB 6261. Introduction to Quantitative Biotechnology. 2 Credits.

PSMB 6262. Advanced Quantitative Biotechnology. 3 Credits.

PSMB 6263. Management of Biotechnology Innovation. 3 Credits.

PSMB 6264. Biotechnology Entrepreneurship and Intrapreneurship. 3 Credits.

PSMB 6265. Commercialization of Bioscience and Biotechnology. 2 Credits.

PSMB 6266. Capstone Project. 1 Credit.

PROF STUDIES IN PUBLICLEADRSHP (PSPL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSPL 6201. MasteringMulti-SectorLeadership. 3 Credits.

PSPL 6202. Policy Issues & Analysis. 3 Credits.

PSPL 6203. Leading in a Digital Environ. 3 Credits.

PSPL 6204. Politics of Orgnl Leadership. 3 Credits.

PSPL 6205. Intergovernmental Relations. 3 Credits.

PSPL 6206. PPP and Contract Mgmt. 3 Credits.

PSPL 6211. RBM Systems. 3 Credits.

PSPL 6212. Managing Multisector Workforce. 3 Credits.

PSPL 6213. Perf-Based Financial Mgmt. 3 Credits.

PSPL 6221. Org Process Improvement Meth. 3 Credits.

PSPL 6222. Org Process Analysis. 3 Credits.

PSPL 6223. Org Process Design. 3 Credits.

PSPL 6224. PI Research Project. 3 Credits.

PSPL 6301. Fundamentals of Organization Performance Improvement. 6 Credits.

In-depth instruction on the Lean Six Sigma approach to organization performance improvement and appropriate uses of a variety of its analytical methods and tools. Students are required to complete a Lean Six Sigma application project and pass all examinations with a score of 80% or better. Students completing all requirements earn a Green Belt Certificate for proficiency in Lean Six Sigma methods and applications. Recommended background: currently working in an organization. (Fall).

PSPL 6302. Leading Organization Performance Improvement Initiatives. 3 Credits.

Approaches for designing organization performance improvement initiatives and criteria for selecting the most effective approach for the intended initiative. Organization dynamics and change processes considered toward crafting a strategy for leading the changes required by the initiative. Methods and tools for planning and managing each phase of the change initiative. Application of concepts and skills to the design and development of Lean Six Sigma Black Belt projects that are implemented in subsequent courses. Recommended background: currently working in an organization. (Spring).

PSPL 6303. Advanced Methods for Organization Performance Improvement. 3 Credits.

Advanced methods for data gathering, analysis, problem definition, and conducting and documenting performance improvement experiments. Change management strategies, experimental process design and tests, use of pilots and "sandboxes," and user-centered design principles. Black Belt-level change initiatives, performance improvement design criteria, and change management and organization engagement strategies. Students are required to begin leading an initiative and implementing changes resulting in documented benefits as well as passing all examinations with a score of 80% or better. Prerequisites: PSPL 6301. Recommended background: currently working in an organization. (Spring).

PSPL 6304. Advanced Applications in Organization Performance Improvement. 3 Credits.

Students learn tools for pulsing the organization to test the effectiveness of their approaches and assess the degree of support from key leaders. Students are encouraged to adopt an evolutionary design perspective and modify their solutions continuously based on feedback and results achieved--documented benefits in cost savings, process speed increases, enhanced customer satisfaction, and revenue enhancements. All examinations must be passed with a score of 80% or better. Students present their final project reports and receive feedback from faculty and a team of peers. Those who complete all requirements with a grade of B or better will earn a Black Belt Certificate demonstrating proficiency in using advanced Lean Six Sigma methods and processes to lead organization performance improvement initiatives. Prerequisites: PSPL 6301, PSPL 6303. Recommended background: currently working in an organization. (Summer).

PROF STUDIES-PHYSICS EDUCATION (PSPH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSPH 6223. Energy & Momentum: K-12 Physics. 4 Credits.

PSPH 6224. Elec & Mag: K-12 Physics. 4 Credits.

PSPH 6225. Waves & Optics: K-12 Physics. 4 Credits.

PSPH 6226. Modern Physics & App: K-12. 3 Credits.

PSPH 6227. Math Techniques: K-12 Physics. 3 Credits.

PSPH 6228. Assessment: K-12 Science Ed. 3 Credits.

PSPH 6230. Capstone Project: K-12 Physics. 3-6 Credits.

PROF STUDIES-PUBLIC RELATIONS (PSPR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSPR 6201. Public Relations Principles and Practices. 3 Credits.

Basic rules and strategies in public relations. Major trends, major firms, and types of business and expertise. New media and integrated media communications.

PSPR 6202. Advanced Writing for PR Professionals. 3 Credits.

PSPR 6203. Research Methods for Public Relations and Public Affairs Managers. 3 Credits.

PSPR 6204. Media Relations in the New Media World. 3 Credits.

PSPR 6205. Fundamentals of Business and Management for Public Relations and Public Affairs. 3 Credits.

PSPR 6206. Ethical Standards in Public Relations and Public Affairs. 3 Credits.

PSPR 6207. Sustainability Communications Methods and Practices. 3 Credits.

PSPR 6208. Strategic Marketing and Marketing Communications. 3 Credits.

PSPR 6210. SpecTopics in Public Relations. 3 Credits.

PSPR 6221. Consumer Behavior. 3 Credits.

PSPR 6222. Multicultural Marketing. 3 Credits.

PSPR 6223. Public Opinion and Political Socialization. 3 Credits.

PROF STUDIES-PUBLISHING (PSPB)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
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PSPB 2110. Book Design. 2 Credits.

PSPB 6201. Book and Journal Publishing. 3 Credits.

PSPB 6203. Business of Publishing. 2 Credits.

PSPB 6205. CopyrightLaw/Print&Cyberspace. 3 Credits.

PSPB 6207. Marketing Strategies. 2 Credits.

PSPB 6213. Book Design. 2 Credits.

PSPB 6221. Publishing Management, Organization, and Strategy. 2 Credits.

PSPB 6222. Accounting and Finance for Publishers. 2 Credits.

PSPB 6224. Budgeting, Fulfillment, and Distribution. 2 Credits.

PSPB 6232. Production Management. 3 Credits.

PSPB 6233. Book & Interior Jacket Design. 2 Credits.

PSPB 6235. Essentials of Web Publishing. 2 Credits.

PSPB 6237. Business Models Online. 2 Credits.

PSPB 6241. The Ethos of Acad. Publishing. 2 Credits.

PSPB 6242. Acquisition, Edit. Sel. & Peer Rev.. 2 Credits.

PSPB 6243. Copyediting and Composition. 2 Credits.

PSPB 6244. Academic Publishing Marketing. 2 Credits.

PSPB 6245. Academic Publishing Technology. 2 Credits.

PSPB 6246. Managing Acad. Pub. Programs. 2 Credits.

PSPB 6251. Fundamentals of Electronic Publishing. 2 Credits.

PSPB 6253. Electronic Publishing Practice. 2 Credits.

Pragmatic, economic, and ethical aspects of electronic publishing for responsible decision making. Prerequisite: PSPB 6251.

PSPB 6255. Elec Publishing: Infrast & Arch. 3 Credits.

The strengths, weaknesses, and utilities intrinsic to content architecture, including reapplications of existing data and open source vs. proprietary solutions. Prerequisite: PSPB 6251.

PSPB 6257. Designing/E-publishing Success. 2 Credits.

Principles of digital design: usability testing, search engine optimization, iterative design, and multiple presentational models. Prerequisite: PSPB 6251.

PSPB 6258. User-Centric Design for Print and Electronic Publications. 2 Credits.

PSPB 6261. Editorial Content, Rights, and Permissions. 2 Credits.

PSPB 6262. Editing for Books, Journals, and Electronic Products. 2 Credits.

PSPB 6263. Research, Indexes, and Bibliographies. 2 Credits.

PSPB 6264. Intermediate Editing. 2 Credits.

PSPB 6265. Managing Editorial Staff. 2 Credits.

PSPB 6267. Internet Components-Book Editing. 2 Credits.

PSPB 6271. Sales Management, Strategy, and Positioning. 2 Credits.

PSPB 6272. Book Publicity & Promotion. 2 Credits.

PSPB 6273. Managing the Marketing Portfolio. 2 Credits.

PSPB 6281. Ethics in Publishing. 1 Credit.

PROFSTD- ADVOCACYGLOBALENVR (PSAD)

Explanation of Course Numbers

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PSAD 6200. Global Perspectives Residencies. 3 Credits.

Residencies focused on understanding how successful approaches to advocacy vary around the world. (Fall, spring, and summer).

PSAD 6225. Fundamentals of Global Political Management. 3 Credits.

The theory, practice, and development of global political management. The impact on governance in regions and in nation states, including campaign strategy, issues development to impact election outcomes, impacting public opinion in regions and countries, beginning elements of building coalitions, and the global development of political management as a field and as a profession. The role of political managers in nation states and their insights from practical experience. Multinational corporations, NGOs, international governing bodies, and global activism. (Fall).

PSAD 6240. Global Advocacy: Strategies, Tools, and Tactics. 3 Credits.

The current state of global advocacy and analysis of strategic models. Consideration of which advocacy tools are best used for specific tasks and how they can be applied around the globe. Specific advocacy tools and techniques that maximize success in regions and countries. Students choose either PSAD 6240 or PSAD 6270, depending on their chosen program emphasis; credit cannot be earned for both courses. (Fall, spring, and summer).

PSAD 6250. Cultural Aspects of Global Engagement. 3 Credits.

Focus on understanding multicultural communities and diverse institutions, customs, and practices. The course is developed to prepare students for effective and ethical public engagement on behalf of global organizations, communicating issues and commitments to diverse audiences and the general market. From a base of cultural understanding, students consider effective engagement strategies and techniques. Global case studies with multicultural viewpoints. (Fall, spring, and summer).

PSAD 6260. Comparative Political Management Environments. 3 Credits.

The operating rules, customs, and processes by which laws are enacted and regulations written in countries around the globe. The multitude of governance systems and the realm of influencers around the globe. The varied systems within which legislators, administrators, bureaucracies, and stakeholder's work. Students are expected to master the rules and procedures of at least one government, understand basic negotiation, and draw comparisons between nations or regions. (Fall, spring, and summer).

PSAD 6270. International Public Relations and Global Advocacy. 3 Credits.

How global public relations strategies are developed and implemented to support advocacy efforts. Case studies of successes and failures. Consideration of communications theories that enable insight into challenges arising from differences in language, culture, politics, and economics worldwide. Students develop, implement, and assess a comprehensive global public relations strategy that includes social media technologies. Students choose either PSAD 6240 or PSAD 6270, depending upon their chosen program emphasis; credit cannot be earned for both courses. (Fall, spring, and summer).

PROFSTUDIES HLTHCARECORP COMPLI (PSHC)

Explanation of Course Numbers

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PSHC 6201. Introduction to Health Care Corporate Compliance. 3 Credits.

PSHC 6202. Compliance with Laws and Regulations I. 3 Credits.

Issues of governance and corporate responsibility, anti-kickback and antitrust law, Civil False Claims Act, emergency medical treatment, and enforcement initiatives. (Fall and spring).

PSHC 6203. Case Studies in Health Care Corporate Compliance. 3 Credits.

Case study approach to investigation and analysis of compliance issues. Application of principles and diagnostic and remediation skills to real-world situations. Prerequisite: PSHC 6202.

PSHC 6204. Compliance with Laws and Regulations II. 3 Credits.

Issues of governance and corporate responsibility, HIPPA compliance and enforcement, federal tax law, Stark law, Sherman Act, Clayton Act, antitrust enforcement policy in healthcare. Prerequisites: PSHC 6201 and PSHC 6202. (Spring and summer).

PSHC 6206. Case Studies in Health Care Corporate Compliance. 3 Credits.

Case study approach to investigation and analysis of compliance issues. Application of principles and diagnostic and remediation skills to real-world situations. Prerequisites: PSHC 6201, PSHC 6202. (Spring and summer).

PROFSTUDIESURBANSUSTAINABILITY (PSUS)

Explanation of Course Numbers

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PSUS 6201. Princs of Sust Urb Planning. 3 Credits.

PSUS 6202. Econ of Sust Communities. 3 Credits.

PSUS 6203. Res Methods for Planners. 3 Credits.

PSUS 6204. Land Use Law. 3 Credits.

PSUS 6210. Sust Transportation Systems. 3 Credits.

PSUS 6211. Sustainable Land Use. 3 Credits.

PSUS 6212. Sustainable Communities. 3 Credits.

PSUS 6213. Advanced Research Methods. 3 Credits.

PSUS 6221. Greenhouse Gas Acctg & Mgmt. 3 Credits.

PSUS 6222. Buildings and Climate Issues. 3 Credits.

PSUS 6223. Transportation & Climate Issues. 3 Credits.

PSUS 6224. Production and Climate Issues. 3 Credits.

PSUS 6230. Sustainable Comm Design Studio. 3 Credits.

PSUS 6231. Practicum: Climate Change Mgt & Pol. 3 Credits.

PSUS 6233. Capstone Studio. 3 Credits.

PSUS 6235. Adv Topics in Urban Sust. 3 Credits.

PSUS 6260. Intro to Sustainable Design. 2 Credits.

PSUS 6261. Ecology of the Built Env.. 2 Credits.

PSUS 6262. Tools for Sustainable Design. 3 Credits.

PSUS 6264. Native Plants I. 2 Credits.

PSUS 6265. Native Plants II. 1 Credit.

PSUS 6266. Ecological Restoration. 1 Credit.

PSUS 6268. Sustainable Design Methods. 2 Credits.

PSUS 6269. Sustenance and the Landscape. 2 Credits.

PSUS 6270. Sustainable Design Charette. 3 Credits.

PROFESSIONAL PSYCHOLOGY (PSYD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSYD 6201. Multi-disciplinary LGBT Health. 2 Credits.

PSYD 6202. LGBT Mental Health. 2 Credits.

PSYD 6203. LGBT Health Policy. 2 Credits.

PSYD 6211. LGBT Health Capstone I. 2 Credits.

PSYD 6212. LGBT Health Capstone II. 1 Credit.

PSYD 6221. LGBT Health Current Topic. 1-2 Credits.

PSYD 8201. Psychological Assessment. 3 Credits.

Cognitive and projective testing, focusing on core batteries used in intellectual and personality assessment. Laboratory fee.

PSYD 8202. Psychological Assessment. 3 Credits.

Continuation of PSYD 8201. Cognitive and projective testing, focusing on core batteries used in intellectual and personality assessment. Laboratory fee.

PSYD 8203. Practicum in Clinical Psychology. 0-3 Credits.

A continuing practicum, repeated in each semester and summer of the program's three years. In year one, focused on psychological assessment; in upper years, on psychological intervention related to the student's choice of area.

PSYD 8204. Biological Bases of Clinical Psychology. 3 Credits.

The structure and function of the nervous system and its application to understanding psychopathology. Development of the nervous system in interaction with learning and experience as a central basis of human growth and disability. (Fall).

PSYD 8205. Psychodynamic Psychopathology. 3 Credits.

The developmental psychodynamic basis for understanding psychopathology, with comparisons to relevant biological and social explanatory factors.

PSYD 8206. Cognitive Bases of Clinical Psychology. 3 Credits.

The theoretical and experimental basis of learning, memory, and cognition. Cognitive growth, maturation, and learning. Cognitive processes in relation to the understanding of psychopathology. (Summer).

PSYD 8207. Group and Organizational Dynamics. 3 Credits.

Social aspects of adaptive and maladaptive dynamic patterns; group structure and the individual; shared unconscious ideas in wish and defense; small, large, and intergroup (community) dynamics and intervention.

PSYD 8209. Statistics and Research Design. 3 Credits.

The role of measurement, design, and statistics in clinical psychological research; basic descriptive and inferential statistics; analysis of variance and multivariate designs; case study designs; clinical field research.

PSYD 8210. Professional Issues. 3 Credits.

The legal and ethical issues in the conduct of professional psychology, including confidentiality, ethical competence, privilege, expert testimony, malpractice, and the insanity defense. Business and ethical issues concerning private practice, licensing, certification, forensics, and insurance reimbursement.

PSYD 8220. Psychodynamic Psychotherapy I. 3 Credits.

Clinical theories, research, techniques, therapeutic action, and ethics. Ego supportive psychotherapy; psychodynamic formulations; object relational and self-psychological perspectives.

PSYD 8221. Psychodynamic Psychotherapy II. 3 Credits.

Continuation of PSYD 8220. Clinical theories, research, techniques, therapeutic action, and ethics. Exploratory psychotherapy; process and outcome; issues of race, class, ethnicity, gender, and sexuality.

PSYD 8222. Behavioral-Cognitive Therapies. 0-3 Credits.

Theoretical and clinical approaches to understanding and modifying behavior, affect, and thought from behavioral and cognitive perspectives. History and development of these perspectives; current work on psychotherapy integration across varying therapeutic approaches.

PSYD 8225. Ego Psychology/Object Relations Theory. 3 Credits.

Consideration of several major contemporary schools of psychodynamic mental functioning—ego psychology, self psychology, object relations theory, and relational perspectives. Formulation skills are built through the two semesters.

PSYD 8226. Ego Psychology/Object Relations Theory. 0-3 Credits.

Continuation of PSYD 8225. Consideration of several major contemporary schools of psychodynamic mental functioning—ego psychology, self psychology, object relations theory, and relational perspectives. Formulation skills are built through the two semesters.

PSYD 8227. History and Systems of Clinical Psychology. 3 Credits.

A review of the historical development of clinical psychology –its roots in mainstream psychology and psychiatry and its modern technical and theoretical systems.

PSYD 8231. Short-Term Psychotherapy. 3 Credits.

A study of brief psychodynamically oriented psychotherapy interventions. Focus on clinical vignettes.

PSYD 8240. Group Psychotherapy. 3 Credits.

Theory and technique in group psychotherapy; history of group therapy and group analysis; current controversies in the field.

PSYD 8244. Cultural Factors-Psychopath/Th. 3 Credits.

PSYD 8246. Community Intervention. 3 Credits.

Consultation theory and practice related to social service, health, educational, and other not-for-profit organizations. Managing change and action plans.

PSYD 8250. Neuropsychological Assessment. 3 Credits.

Theory and practice of neuropsychological assessment. History and development of the field. Major batteries, individualized approaches, and specialized tests.

PSYD 8251. Advanced Psychodynamic Assessment. 3 Credits.

Recent trends in projective testing; Lerner and Lerner, Schafer, Allison and Blatt, Kwawer, Sugarman, Exner.

PSYD 8252. Child and Adolescent Assessment. 3 Credits.

Case seminar with clinical presentations, focused on the core clinical battery. Problems of differential diagnosis between neuropsychological hypotheses and conflict-based hypotheses.

PSYD 8255. Forensic Assessment. 3 Credits.

Overview of the professional standards and ethics guidelines for forensic evaluations. The psychological assessment of criminal cases, the role of the psychologist in expert testimony, and concepts and principles of law encountered in the forensic evaluation process. The role of theory and research in the criminal evaluation process.

PSYD 8260. Child Development. 3 Credits.

Cognitive and emotional factors in the development of normal and abnormal personality dynamics in children and adolescents: experiential and maturational aspects, learning disabilities, the development of conflict and compromise formations; the relevance of child development to adult psychodynamics and psychotherapy.

PSYD 8262. Child and Adolescent Psychotherapy. 3 Credits.

Case seminar on child and adolescent treatment. Biological and psychological treatments; intensive vs. short term; conceptualizations of play therapy; differences from adult techniques.

PSYD 8264. Child and Adolescent Psychopathology. 3 Credits.

Theory and research on child and adolescent psychopathology. The development of diagnostic categories and their relevance to psychodynamic viewpoints.

PSYD 8265. Family Therapy. 3 Credits.

Survey of classical and modern theories of family structure and therapy. History and development of the field. Major schools and current controversies.

PSYD 8266. Clinical Intervention in Schools. 3 Credits.

Theory and practice of clinical psychological interventions in schools. Testing, observation, consultation.

PSYD 8267. Advanced Child Psychotherapy. 3 Credits.

Technical approaches to selected clinical problems and populations. Trauma, physical and sexual abuse, problems in learning and attention, gender identity disorder, behavior problems, adoption, and divorce. Coordination of developmental and therapeutic processes, and collateral work with parents.

PSYD 8270. Current Topics in Clinical Psychology. 0-12 Credits.

May be repeated for credit provided the topic differs.

PSYD 8271. Independent Study. 1-12 Credits.

PSYD 8280. Issues-Gender Development. 3 Credits.

Studies of similarities and differences in male and female gender development and sexual object choice. Recent theoretical and clinical contributions. Readings in Freud, Fast, Mayer, Stoller, Tyson and Tyson, Kleeman, Chassaguet-Smirgel, Kaplan, and Friedman.

PSYCHOLOGY (PSYC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSYC 1000. Dean's Seminar. 3 Credits.

PSYC 1001. General Psychology. 3 Credits.

Fundamental principles underlying human behavior. (Fall and spring).

PSYC 2011. Abnormal Psychology. 3 Credits.

Causes, diagnosis, treatment, and theories of various types of maladjustments and mental disorders. Prerequisite: PSYC 1001.

PSYC 2011W. Abnormal Psychology. 3 Credits.

Causes, diagnosis, treatment, and theories of various types of maladjustments and mental disorders. Prerequisite: PSYC 1001.

PSYC 2012. Social Psychology. 3 Credits.

Social foundations of behavior: cognition, motivation, role behavior, communication, small-group processes, and attitudes. Prerequisite: PSYC 1001.

PSYC 2013. Developmental Psychology. 3 Credits.

Introduction to the study of human development; theory and research concerning changes in physical, cognitive, and social functioning and influences on the developing individual. Prerequisite: PSYC 1001.

PSYC 2014. Cognitive Psychology. 3 Credits.

Introduction to the study of cognition; review of data and theories on the topics of perception, attention, memory, language, reasoning, and decision making. Prerequisite: PSYC 1001.

PSYC 2015. Biological Psychology. 3 Credits.**PSYC 2101. Research Methods-Psychology. 3 Credits.**

Survey of research designs (e.g., case studies, correlational designs, experiments), methods (e.g., questionnaires, observations), and measurement issues (e.g., reliability and validity). Prerequisite or corequisite: PSYC 1001, STAT 1053.

PSYC 2144. Industrial/Organizational Psychology. 3 Credits.

Psychological concepts and methods applied to problems of personnel management, employee motivation and productivity, supervisory leadership, and organizational development. Prerequisite: PSYC 1001.

PSYC 2160. Group Dynamics. 3 Credits.

Relationship of the individual to groups, collectivities, and larger social systems. Theory, research, and applications of group and organizational processes. Prerequisite: PSYC 1001.

PSYC 2508. Humanistic Psychology. 3 Credits.

Critical examination of humanistic psychology. Emphasis on role of consciousness in human behavior. Philosophic foundations, existential, phenomenological, and transpersonal psychology. (Formerly PSYC 3108) Prerequisites: PSYC 1001. (Fall and spring).

PSYC 2514. Adult Development and Aging. 3 Credits.

Psychological aging and development during the adult years, with an emphasis on theories of adult development and research on changes in cognitive functioning and social adjustment in early, middle, and later adulthood. (Formerly PSYC 3114) Prerequisites: PSYC 1001 and PSYC 2013. (Fall and spring).

PSYC 2529. Theories of Personality. 3 Credits.

Survey of personality theories; emphasis on their application to problems of individuals. (Formerly PSYC 3129) Prerequisites: PSYC 1001. (Fall and spring).

PSYC 2531. Psychological Tests. 3 Credits.

Survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee. (Formerly PSYC 3131) Prerequisites: PSYC 1001. (Fall and spring).

PSYC 2544. Industrial/Organizational Psychology. 3 Credits.

Psychological concepts and methods applied to problems of personnel management, employee motivation and productivity, supervisory leadership, and organizational development. (Formerly PSYC 2144) Prerequisites: PSYC 1001. (Fall and spring).

PSYC 2550. Psychology of Sex Differences. 3 Credits.

Relevant biological, psychological, and sociological influences on males and females in the development of sex differences; hormonal differences, gender identity, differential socialization of sons and daughters, masculinity/femininity, cultural evaluation of male and female roles. Survey of relevant psychological theory. Emphasis on empirical research and hypothesis testing. (Formerly PSYC 3150) Prerequisites: PSYC 1001. (Spring).

PSYC 2554. Psychology of Crime and Violence. 3 Credits.

Examination of many psychological aspects of criminal behavior; personality of criminals and of psychological processes affecting behavior. (Formerly PSYC 3154) Prerequisites: PSYC 1001. (Fall and spring).

PSYC 2556. Psychology of Attitudes and Public Opinion. 3 Credits.

Psychology of opinion formation, measurement of opinion, social determinants of attitudes, psychological processes in propaganda, bases of receptivity to propaganda, psychological warfare. (Formerly PSYC 3156) Prerequisites: PSYC 1001. (Fall and spring).

PSYC 2560. Group Dynamics. 3 Credits.

Relationship of the individual to groups, collectivities, and larger social systems. Theory, research, and applications of group and organizational processes. (Formerly PSYC 2160) Prerequisites: PSYC 1001. (Fall and spring).

PSYC 2588. Attitudes Toward Death and Dying. 3 Credits.

Exploration of the many different aspects, attitudes, and experiences associated with the process of death and dying. (Formerly PSYC 3188) Prerequisites: PSYC 1001. (Fall, spring, and summer).

PSYC 2596. History and Systems of Psychology. 3 Credits.

A survey and integration of the major viewpoints and concepts of psychology. Recommended for students planning graduate study. (Formerly PSYC 4196) Prerequisites: PSYC 1001. (Spring).

PSYC 2945. Psychological Study of Spirituality. 3,4 Credits.

The complex interrelationship between psychology and spirituality: health and wellness; development of a spiritual life; psychological factors involved in spirituality; therapy and multicultural issues. (Formerly PSYC 3945) Prerequisites: PSYC 1001. (Fall and spring).

PSYC 3106. Principles and Methods of Psychology. 4 Credits.

Lecture (3 hours), laboratory (3 hours). An experimental approach to understanding behavior; individual and class experiments performed. Laboratory fee. Prerequisite: PSYC 1001 AND PSYC 2014 OR PSYC 2015.

PSYC 3106W. Principles and Methods of Psychology. 4 Credits.

Lecture (3 hours), laboratory (3 hours). An experimental approach to understanding behavior; individual and class experiments performed. Laboratory fee. Prerequisite: PSYC 1001.

PSYC 3108. Humanistic Psychology. 3 Credits.

Critical examination of humanistic psychology. Emphasis on role of consciousness in human behavior. Philosophic foundations, existential, phenomenological, and transpersonal psychology. Prerequisite: PSYC 1001.

PSYC 3112. Psychology of Adolescence. 3 Credits.

Psychological characteristics and problems peculiar to adolescence, with emphasis on application of psychology to solution of such problems. Prerequisite: PSYC 1001 and PSYC 2013.

PSYC 3114. Adult Development and Aging. 3 Credits.

Psychological aging and development during the adult years, with an emphasis on theories of adult development and research on changes in cognitive functioning and social adjustment in early, middle, and later adulthood. Prerequisite: PSYC 1001 and PSYC 2013.

PSYC 3115. Developmental Psychopathology. 3 Credits.

The origins of child psychopathology, including developmental perspectives and the potential contributions of child-, family-, and community-based characteristics to the emergence of psychopathology. The development of specific childhood disorders. Prerequisite: PSYC 2101 AND PSYC 2011 OR PSYC 2013.

PSYC 3118. Neuropsychology. 3 Credits.

Analysis of neural processes underlying behavior. Basic structure and functions of the nervous system, with emphasis on sensory processes, learning and memory, motivation, and emotion. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3121. Memory and Cognition. 3 Credits.

An examination of the psychological processes underlying human memory and cognition. Topics cover theoretical and experimental issues involving a range of cognitive function from attention and pattern recognition to learning and memory. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3122. Cognitive Neuroscience. 3 Credits.

How the structure and functions of the brain are related to cognitive processes and their associated behaviors. The biological bases of behavior and mental activity. Research and case studies by cognitive psychologists, neuroscientists, psychiatrists, and linguists, focusing on how the brain affects pattern recognition, attention, short-term and long-term memory processes, and language. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3124. Visual Perception. 3 Credits.

An overview of human perception, ranging from the detection of simple stimuli to the identification of objects and events. Perceptions of color, motion, and spatial layout. Research methodology, biological foundations, and theoretical issues. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3125. Cross-Cultural Psychology. 3 Credits.

Introduction to the theory, methods, and research of cross-cultural psychology, with emphasis on immigrants and ethnic minorities in the United States and on other cultures. Prerequisite: PSYC 1001 and PSYC 2012 or PSYC 2013.

PSYC 3126. Multicultural Psychology. 3 Credits.

The influence of culture on major psychology concepts Current theories and research on culture, with culture being broadly defined to include race, ethnicity, gender, sexual orientation, disability status, and socioeconomic status. Empirical methodologies in cultural psychology, and appreciation of cultural groups within the United States. Issues of culture in the interpretation of personal experiences and in application of cultural diversity issues to various settings. Culturally relevant styles of communication, values from different cultures, racial identity, power and privilege, and issues around health and mental health. Multiculturalism in the modern diverse society. Prerequisite: PSYC 2101 and PSYC 2011 or PSYC 2012.

PSYC 3126W. Multicultural Psychology. 3 Credits.

PSYC 3128. Health Psychology. 3 Credits.

Current research in the area of health psychology, with special attention to psychological factors related to health and illness, psychological intervention with medical patients, and psychological approaches to illness prevention and health promotion. Prerequisite: PSYC 1001.

PSYC 3129. Theories of Personality. 3 Credits.

Survey of personality theories; emphasis on their application to problems of individuals. Prerequisite: PSYC 1001.

PSYC 3131. Psychological Tests. 3 Credits.

Survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee. Prerequisite: PSYC 1001.

PSYC 3132. Social and Personality Development. 3 Credits.

Examination of personal, emotional, and social development from infancy to adolescence and influences on that development. Prerequisite: PSYC 2101 and PSYC 2013.

PSYC 3150. Psychology of Sex Differences. 3 Credits.

Relevant biological, psychological, and sociological influences on males and females in the development of sex differences; hormonal differences, gender identity, differential socialization of sons and daughters, masculinity/femininity, cultural evaluation of male and female roles. Survey of relevant psychological theory. Emphasis on empirical research and hypothesis testing. Prerequisite: PSYC 1001.

PSYC 3154. Psychology of Crime and Violence. 3 Credits.

Examination of many psychological aspects of criminal behavior; personality of criminals and of psychological processes affecting behavior. Prerequisite: PSYC 1001.

PSYC 3156. Psychology of Attitudes and Public Opinion. 3 Credits.

Psychology of opinion formation, measurement of opinion, social determinants of attitudes, psychological processes in propaganda, bases of receptivity to propaganda, psychological warfare. Prerequisite: PSYC 1001.

PSYC 3170. Clinical Psychology. 3 Credits.

An exploration of the history, functions, and concerns of the clinical psychologist. Assessment, treatment, community approaches, ethics. Prerequisite: PSYC 1001, PSYC 2011.

PSYC 3172. Psychopathology & the Media. 3 Credits.

How abnormal behaviors and mental disorders are portrayed in film and the media, including analysis of the accuracy of these portrayals, focusing on symptomatology, etiology, and treatment of adult psychopathology. Prerequisite: PSYC 2101 and PSYC 2011.

PSYC 3173. Community Psychology. 3 Credits.

The origins and current practice of community psychology, and comparison of community psychological approaches with traditional clinical perspectives. The role of psychology in addressing social issues facing communities; methods for research and intervention targeting communities. Prerequisite: PSYC 2101 and PSYC 2011.

PSYC 3188. Attitudes Toward Death and Dying. 3 Credits.

Exploration of the many different aspects, attitudes, and experiences associated with the process of death and dying. Prerequisite: PSYC 1001.

PSYC 3193. Seminar in Industrial/Organizational Psychology. 3 Credits.

Selected specialized topics in the field of psychology and work behavior, such as human ability and personality, decisions and risk behavior, organizational change, and leadership. May be repeated for credit. (Formerly PSYC 4193). Prerequisites: PSYC 1001 and PSYC 2544 or permission of instructor. (Fall).

PSYC 3591. Supervised Research. 1-3 Credits.

Open to qualified students by permission to conduct research under supervision of a faculty member; arrangements must be made with the sponsoring faculty member prior to registration. A list of participating faculty members and their research specialties is available from the Department. May be repeated; PSYC 3591 and PSYC 4591 may be taken for a total of 9 credits maximum. Prerequisites: PSYC 1001, PSYC 2101. (Fall, spring, and summer).

PSYC 3592. Field Experience. 3 Credits.

Senior psychology majors spend a minimum of six hours a week in a local mental health, rehabilitation, school, or community setting. Students must have weekly blocks of time available. (Formerly PSYC 4192) Prerequisites: PSYC 1001 and PSYC 2101. (Fall and spring).

PSYC 3945. PSYC4196201303. 3,4 Credits.

The complex interrelationship between psychology and spirituality: health and wellness; development of a spiritual life; psychological factors involved in spirituality; therapy and multicultural issues. Same as REL 3945. Prerequisite: PSYC 1001.

PSYC 4106. Research Lab in Sensation and Perception. 4 Credits.

Lecture (3 hours), laboratory (3 hours). An experimental approach to understanding behavior; individual and class experiments performed. Laboratory fee. (Formerly PSYC 3106) Prerequisites: PSYC 1001 and PSYC 2101 and (PSYC 2014 or PSYC 2015). (Fall and spring).

PSYC 4191. Independent Research. 1-3 Credits.

Open to qualified students by permission; arrangements must be made with the sponsoring faculty member prior to registration. A list of participating faculty members and their research specialties is available from the Department. May be repeated three times for credit. Prerequisite: PSYC 1001, PSYC 2101.

PSYC 4192. Field Experience. 3 Credits.

Senior psychology majors spend a minimum of six hours a week in a local mental health, rehabilitation, school, or community setting. Students must have weekly blocks of time available. Prerequisite: PSYC 1001.

PSYC 4193. Seminar in Industrial/Organizational Psychology. 3 Credits.

Selected specialized topics in the field of psychology and work behavior, such as human ability and personality, decisions and risk behavior, organizational change, and leadership. May be repeated for credit. Prerequisite: PSYC 1001 and PSYC 2144 or permission of instructor.

PSYC 4196. History & Systems-Psychology. 3 Credits.

A survey and integration of the major viewpoints and concepts of psychology. Recommended for students planning graduate study. Prerequisite: PSYC 1001.

PSYC 4197. Honors Seminar. 3 Credits.

Selected topics in psychology that change each semester. Intended primarily for students in the Special Honors program in psychology. May be repeated once for credit. Prerequisite: PSYC 1001 and PSYC 2101.

PSYC 4198. Current Research Issues-Psych. 3 Credits.

Conducted as a seminar. Recent experiments in psychology, including those performed by members of the class; emphasis on student participation. May be repeated once for credit. Prerequisite: PSYC 1001 and PSYC 2101.

PSYC 4199. Current Topics in Psychology. 3 Credits.

Topics vary. May be repeated for credit provided the topic differs.

PSYC 4591. Independent Research. 1-3 Credits.

Open to qualified students by permission to pursue an independent research project with the supervision of a faculty member; arrangements must be made with the sponsoring faculty member prior to registration. May be repeated for credit; PSYC 3591 and PSYC 4591 may be taken for a total of 9 credits maximum. (Formerly PSYC 4191) Restricted to . Prerequisites: PSYC 1001, PSYC 2101. (Fall, spring, and summer).

PSYC 4997. Honors Seminar. 3 Credits.

Selected topics in psychology that change each semester. Intended primarily for students in the Special Honors program in psychology. May be repeated once for credit. Prerequisites: PSYC 1001 and PSYC 2101. (Formerly PSYC 4197) (Fall and spring).

PSYC 6998. Thesis Research. 3 Credits.**PSYC 6999. Thesis Research. 3 Credits.****PSYC 8202. Psychological Research Methods and Procedures. 3 Credits.**

Required in all graduate psychology programs. Includes philosophy of science, types of research design, and methods of data collection. Prerequisite: graduate standing, a laboratory course in psychology, and a course in statistics.

PSYC 8203. Experimental Foundations of Psychology: Learning, Memory, and Cognition. 3 Credits.

Current conceptions of learning, memory, and cognition; the research upon which these conceptions are based; applications to practical contexts.

PSYC 8204. Experimental Foundations of Psychology: Biological Basis of Behavior. 3 Credits.

Introduction to the structure and function of the nervous system. Topics include neural communication, sensory processes, memory, neuroendocrinology of sex differences and stress, psychiatric and neurodegenerative disorders.

PSYC 8207. Psych Assessment I. 3 Credits.

Open only to clinical graduate students in the Department of Psychology. Theoretical and clinical aspects of assessment; includes interviewing, psychometric tests, and projective techniques. Two-hour laboratory—diagnostic work at clinical facilities. Material fee.

PSYC 8208. Psych Assessment II. 3 Credits.

Continuation of PSYC 8207. Open only to clinical graduate students in the Department of Psychology. Theoretical and clinical aspects of assessment; includes interviewing, psychometric tests, and projective techniques. Two-hour laboratory—diagnostic work at clinical facilities. Material fee.

PSYC 8210. Developmental Theories and Issues. 3 Credits.

Orientation to the field of developmental psychology, with emphasis on traditional and contemporary theories, fundamental concepts and issues, and methodological approaches.

PSYC 8211. Community Psychology I. 3 Credits.

Survey of the history, theories, and values guiding community psychology; models of service delivery.

PSYC 8212. Community Psychology II. 3 Credits.

Continuation of PSYC 8211. Applications of the principles and theories of community psychology to interventions and research. PSYC 8211 is prerequisite to PSYC 8212. Continuation of PSYC 8211. Applications of the principles and theories of community psychology to interventions and research. PSYC 8211 is prerequisite to PSYC 8212.

PSYC 8218. Evidence-Based Interventions. 3 Credits.

Introduction to theory and technique of psychotherapeutic approaches of proven effectiveness. (Spring and summer).

PSYC 8219. Group Dynamics. 3 Credits.**PSYC 8220. Ethics and Professional Issues. 3 Credits.****PSYC 8223. Seminar: Human Memory. 3 Credits.**

Selected topics of current research interest in the area of human memory. Emphasis on encoding and retrieval processes, amnesia, and disorders of memory.

PSYC 8225. Behavioral Approaches to Child Assessment and Therapy. 3 Credits.

Child assessment and treatment from a behavioral viewpoint. The application of conditioning, reinforcement, and shaping principles with reference to specific disorders of childhood.

PSYC 8227. Seminar: Principles of Psychotherapy. 3 Credits.

For graduate students in clinical psychology. Patient's needs and demands on the therapist. Case participation heavily relied upon. Prerequisite: PSYC 8218.

PSYC 8228. Seminar: Principles of Psychotherapy. 3 Credits.

Continuation of PSYC 8227. For graduate students in clinical psychology. Patient's needs and demands on the therapist. Case participation heavily relied upon. Prerequisite: PSYC 8218.

PSYC 8231. Development of Psychometric Instruments. 3 Credits.

Quantitative techniques and principles used in construction, standardization, and evaluation of personality and ability measures for research and practice; quantification of human judgment for measurement purposes. Prerequisite: course in tests and measurements and an elementary course in statistics.

PSYC 8236. Ethnic and Racial Diversity in Psychology. 3 Credits.

Basic theoretical models of research in ethnic, racial, and cultural diversity and new directions in the field. The impact of being an ethnic minority in the United States.

PSYC 8237. The Practice of General Psychology I. 3 Credits.

Application of psychological principles and findings to a wide spectrum of human problems. Professional issues facing the psychologist offering services. Participation in the development, implementation, and evaluation of applied psychological services and projects. (Fall).

PSYC 8238. The Practice of General Psychology II. 3 Credits.

Continuation of PSYC 8237. Application of psychological principles and findings to a wide spectrum of human problems. Professional issues facing the psychologist offering services. Participation in the development, implementation, and evaluation of applied psychological services and projects. (Spring).

PSYC 8239. Lifespan Developmental Psychopathology I. 3 Credits.

Infancy, childhood, and adolescence. (Fall).

PSYC 8240. Lifespan Developmental Psychopathology II. 3 Credits.

Continuation of PSYC 8239. Adulthood. (Spring).

PSYC 8243. Seminar: Psychology of Leadership in Organizations. 3 Credits.

Theories and issues related to the emergence and effectiveness of leaders, with focus on leadership behaviors and processes in organizations.

PSYC 8244. Theories and Processes of Organizational Management. 3 Credits.

Basic functions and techniques of organizational management—design, control, direction, and decision making—examined from the viewpoint of behavioral science.

PSYC 8245. Seminar: Organizational Behavior. 3 Credits.

Analysis of organizational behavior; emphasis on motivation and productivity. Recent research on employee attitudes, primary group, supervisory leadership, formal and informal organization, job design. (Fall).

PSYC 8246. Seminar: Personnel Evaluation Techniques. 3 Credits.

Techniques of personnel selection and performance evaluation. Employment tests, personal data, assessment interviews, performance ratings, and assessment centers. Federal guidelines in employee selection. Includes practicum.

PSYC 8248. Research Applications to Organizational Intervention and Change. 3 Credits.

Emphasis on development of models of organizational effectiveness; design of valid diagnostic instruments; implementation of research strategies; establishment of program evaluation criteria. (Fall).

PSYC 8251. Behavioral Neuroscience. 3 Credits.

The neural basis of behavior, with special focus on the psychobiological determinants of learning, memory, and cognition. Methodologies used for different levels of analysis with normal and brain-impaired subjects.

PSYC 8253. Social Cognition. 3 Credits.

Social psychology theories, conceptual approaches, and their applications. Social cognition, person perception, attribution, information processing, attraction, stereotyping.

PSYC 8254. Social Influence. 3 Credits.

Social psychology theories, conceptual approaches, and their applications. Analysis of intentional and unintentional social influence processes and their effects on behavior. Current research on conformity, social power, social exchange, and impression management.

PSYC 8255. Attitudes and Attitude Change. 3 Credits.

Current theory and research on attitudes and attitude change.

PSYC 8256. Introduction to Survey Research. 3 Credits.

Theory and practice of face-to-face telephone and mail surveys. Practical experience with all stages from the formulation of research questions and hypotheses to questionnaire design, sampling, pilot, testing, interviewing, coding, and data cleaning. Prerequisite: STAT 2105 .

PSYC 8257. Current Topics in Social Psychology. 3 Credits.

Advanced seminar with focus on major theoretical approaches, research, or problem areas within field of social psychology. Topic changes each semester. (Fall and spring).

PSYC 8258. Qualitative Research and Analysis. 3 Credits.

Qualitative research and analysis. A focus on theory, didactic material relevant to qualitative methodologies, and applied qualitative research design and analysis. (Spring).

PSYC 8259. Psychology of Individual and Group Decision Making. 3 Credits.

Examination of processes in organizational decision making and group behavior. Topics include group and individual decision-making approaches, decision aids and support systems, performance and decision effectiveness, and risk analysis.

PSYC 8260. Psychology of Work Group Development. 3 Credits.

Examination of theory and research on groups as task performance systems. Approaches to team development as a means of improving work group effectiveness, including goal setting, role clarification, increasing interpersonal skills, and conflict resolution. (Spring).

PSYC 8268. Seminar: Neuropsychology. 3 Credits.

Selected problems in research relating the brain and behavior. Independent topics each semester, such as sensory processing, brain development and behavior, clinical aspects of nervous system function.

PSYC 8275. Women and Health. 3 Credits.

Theoretical and empirical analyses of women's health: how women's health is constructed by medical, psychological, and critical theorists; how sexism, racism, and classism contribute to women's health problems; and identification of conditions that lead to optimal health and well-being. Same as WSTU 8275.

PSYC 8277. Health Psychology. 3 Credits.

Social psychological theories and research that relate to health and illness. Application of theories of social learning, attribution, attitude change, and social influence to topics such as health promotion and disease prevention, health compliance, and coping with illness and disability.

PSYC 8279. Special Topics in Health Psychology. 3 Credits.

May be repeated for credit provided the topic differs. Admission by permission of instructor.

PSYC 8287. Current Topics in Clinical Psychology. 3 Credits.

Advanced seminar with focus on major theoretical approaches, research, or problem areas. Topics vary. May be repeated for credit.

PSYC 8288. Current Topics in Industrial/Organizational Psychology. 3 Credits.

Advanced seminar with focus on major theoretical approaches, research, or problem areas. Topics vary. May be repeated for credit.

PSYC 8289. Seminar: Current Topics in Experimental Psychology. 3 Credits.

Review and discussion of contemporary research and theory in a specialized field of psychological study, by leaders in the field. Independent topics each semester; may be repeated for credit. (Fall and spring).

PSYC 8291. Theories of Organizational Behavior. 3 Credits.

Examination of current theoretical models and research. (Spring).

PSYC 8295. Independent Research. 3 Credits.

Individual library or experimental research under supervision of staff member. Arrangements must be made with sponsoring faculty member prior to registration. May be repeated for credit.

PSYC 8998. Advanced Reading and Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy major field examination. May be repeated for credit.

PSYC 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

PUBLIC HEALTH (PUBH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PUBH 0920. Continuing Research - Master's. 1 Credit.

Continuing Research Credit- Master's Level (Fall, spring, and summer).

PUBH 0940. Continuing Research - Doctoral. 1 Credit.

Continuing Research Credit- Doctoral (Fall, spring, and summer).

PUBH 1101. Intro/Pub Health & Health Svcs. 3 Credits.

Introduction to aspects of public health and health services, including health services administration and policy, maternal and child health, environmental health, and health promotion.

PUBH 1102. History of Public Health. 3 Credits.

Historical and philosophical development of public health and its contributions to understanding, preventing, and controlling disease and disabilities.

PUBH 2110. Public Health Biology. 3 Credits.

Basic scientific mechanisms, concepts, and principles in health and the pathogenesis of diseases; a foundation for applications to public health. Prerequisite: BISC 1005 or BISC 1111.

PUBH 2111. Introduction to Preventive Medicine. 3 Credits.

Introduction to the clinical science basis of preventive medicine, including nutrition, infectious diseases, immunology, and human growth and development. Overview of the goals and methods used for disease prevention.

PUBH 2112. Principles of Health Education and Health Promotion. 3 Credits.

Social and behavioral theories underlying health promotion program development and evaluation. Practical applications in a variety of domestic and global public health settings. Prerequisite or corequisite: PUBH 1101.

PUBH 2113. Impact of Culture upon Health. 3 Credits.

Relationships between cultural values and the development of modern health systems based on Western models of health care practice. Reliance upon traditional forms of health care. Examples of successful incorporation of traditional practices into evolving health care systems.

PUBH 2114. Environment, Health, and Development. 3 Credits.

Survey of the relationship between health and development and environmental trends. Topics include deforestation, urban contamination, and desertification.

PUBH 2115. Health, Human Rights, and Displaced Persons. 3 Credits.

Concepts of health as a human right, ethics, and the participation of the international community in moving toward health for all. Civil and international conflict in the generation of displaced populations.

PUBH 2116. Global Delivery of Health Systems. 3 Credits.

Introduction to health systems and the basic concepts of health systems administration and financing and health care reform with examples from advanced, middle income, and poor countries.

PUBH 2117. Service-Learning in Public Health. 3 Credits.

Students are responsible for securing an approved service site before the beginning of the semester. See the undergraduate public health website. Prerequisite: permission of program director.

PUBH 3130. Health Services Management and Economics. 3 Credits.

Basics of management theory, finance, and economics as applied to managing in the public health and health services field. Prerequisite: ECON 1011.

PUBH 3131. Epidemiology: Measuring Health and Disease. 3 Credits.

Principles of epidemiology applied to disease surveillance, control of infectious and chronic diseases, and health services/health policy. Understanding the basic research designs and their relationship to establishing cause and effect and effectiveness of interventions to prevent and cure disease. Prerequisite: PUBH 1101, STAT 1127 .

PUBH 3132. Health and Environment. 3 Credits.

Introduction to environmental and occupational health and implications for individual and population health. Issues of clean water, environmental toxins, air pollution, and the environmental impact on infectious diseases.

PUBH 3133. Global Health & Development. 3 Credits.

Basic concepts of development theory, international health policy, demographic trends, and health promotion; how the relationships between socioeconomic development and global health can be observed, measured, and used for the management of health programs.

PUBH 3135W. Health Policy. 3 Credits.

An introduction to the fundamentals of the health care system in the United States and strategies available to policymakers when addressing problems relating to access, financing, and delivery of health care. Prerequisite: PUBH 1101.

PUBH 3136. Health Law. 3 Credits.

Legal concepts related to individual health care and public health systems in the United States. Health care law, public health law, and bioethics.

PUBH 3137. Global Public Health Nutrition. 3 Credits.

Consideration of hunger and other nutrition issues globally, including food insecurity, under/over nutrition, and micronutrient deficiencies. Application of UNICEF malnutrition framework to describe vulnerable groups, critique program strategies, and identify multisectorial strategies to reduce hunger and malnutrition. Prerequisites: Required: PubH 3133 Global Health and Development Recommended: EXSC 2119 Basic Nutrition. (Spring).

PUBH 3150. Sustainable Energy & Env Hlth. 3 Credits.

Sustainability issues from the perspective of environmental health. Technical, social, and health implications of specific energy sources. Energy conservation and efficiency in the context of population growth, food and water resources, and maintenance of a healthy environment for future generations.

PUBH 3151. Current Issues in Bioethics. 3 Credits.

Recent advances in science and technology make biomedical ethics a continuing matter of concern for students, health professionals and laypersons alike. This course offers an opportunity to investigate both general and specific ethical questions and ethical decision making from both a personal and organizational perspective, including topics such as the right to health care, research with human subjects, reproductive issues, genetics, professional and student roles and responsibilities, and end-of-life issues. Such investigation requires exposure to the issues and to various attempts to address and resolve them. The course requires participation in group discussions as well as independent critical writing.

PUBH 3190. Topics in Public Health. 1-5 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Various offerings each semester.

PUBH 4140. Senior Seminar. 3 Credits.

Limited to public health majors in their senior year. Students develop a public health intervention incorporating various domains of the discipline of public health.

PUBH 4140W. Senior Seminar. 3 Credits.

Limited to public health majors in their senior year. Students develop a public health intervention incorporating various domains of the discipline of public health.

PUBH 4199. Independent Study. 3 Credits.

For departmental majors only. Prerequisite: outline of intended project must be approved prior to registration by instructor and dean's office.

PUBH 6001. Biological Concepts/Public Hlth. 2 Credits.

Provides an overview of current knowledge about biological mechanisms of major diseases causing death and disability in the US and globally; understanding and interpreting the reciprocal relationships of genetic, environmental, and behavioral determinants of health and disease in an ecologic context; analyzing, discussing, and communicating biologic principles of disease from a public health perspective. Summer, Fall, Spring, Summer.

PUBH 6002. Biostatistical Applic for PubH. 3 Credits.

Application of biostatistical principles to critical analysis of retrospective studies, prospective studies, and controlled clinical trials, as well as studies in the health services literature. Selection, basic calculations, and interpretation of statistical methods for detection of significant associations and differences. Summer, Fall, Spring.

PUBH 6003. Prin & Practice/Epidemiology. 3 Credits.

General principles, methods, and applications of epidemiology. Outbreak investigations, measures of disease frequency, standardization of disease rates, study design, measures of association, hypothesis testing, bias, effect modification, causal inference, disease screening, and surveillance. Case studies apply these concepts to a variety of infectious, acute, and chronic health conditions affecting the population. Summer, Fall, Spring.

PUBH 6004. Env/Occ Hlth-Sustainable World. 2 Credits.

Examines the connection between population health and exposures to chemical, physical, and biological agents in the environment. Through the use of problem-solving frameworks, students will become familiar with data sources, methodologies and policy approaches being used to address the public health impacts of environmental and occupational health hazards, including the consequences of climate change, natural resource degradation, and industrial chemicals. The course will integrate key concepts of environmental health with principles of sustainability to illustrate how public policies and practices on the local, national and global level affect population health. Summer, Fall, Spring.

PUBH 6006. Mgt & Policy Approaches to PH. 3 Credits.

An introduction to basic principles, concepts and skills related to public health management and policy. This course is divided into three sections focusing on management and policy approaches to public health at three different levels: the system, the organization, and the group/individual level. This course provides an introduction to basic principles, concepts and skills related to public health management and policy. The course is divided into three sections focusing on management and policy approaches to public health at three different levels: the system, the organization, and the group/individual level. The first five weeks focus on the larger, system issues surrounding the organization, financing, and delivery of health services in the United States along with policy typologies/frameworks and the legal basis for health policy interventions. The next four weeks examine policy and management at the organization level. During this segment, we will explore organization theory and design, organization change, financial management, and crafting a policy analysis for an organizational decision-maker. The final five weeks will be dedicated to the group and individual. Here, we will explore personnel management, teams and team performance, and communication. Throughout the course, the interrelated nature of management and policy will be reinforced.

PUBH 6007. Social&BehaviorAppr-Pub.Hlth. 2 Credits.

Emphasizes social and behavioral science theories, models, and concepts that can be applied to public health problems and interventions. Describes the role of social and community factors, including race/ethnicity and culture, in both the onset and solution of public health problems and describe the inter-relationship between the social/behavioral sciences. Summer, Fall, Spring.

PUBH 6010. Independent Study. 1-6 Credits.

Designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Permission of instructor/advisor required. Summer Fall Spring.

PUBH 6013. Master's Thesis. 3 Credits.

See Advisor. Summer, Fall, Spring.

PUBH 6014. Practicum. 1-3 Credits.

This course provides the opportunity for MPH students to apply the knowledge and skills acquired through their programs of study. A planned, supervised and evaluated practice experience that is relevant to the student's program is an essential component of a public health professional degree program. These opportunities can take place in a variety of agencies or organizations. Each program customizes Practicum requirements to meet students' needs. (Credit/No Credit) [For 45-credit MPH students who started Summer 06 or after.] Summer, Fall, Spring.

PUBH 6015. Culminating Experience. 2-3 Credits.

A culminating experience is one that requires a student to synthesize and integrate knowledge acquired in coursework and other learning experiences and to apply theory and principles in a situation that approximates some aspect of professional practice. It is through this course that faculty evaluates the extent to which the student has mastered the body of knowledge and can demonstrate proficiency in the required competencies. Each program customizes Culminating Experience requirements to meet students' needs. [For 45-credit MPH students who started Summer 06 or after.] Summer, Fall, Spring.

PUBH 6016. Field/Laboratory Experience. 2 Credits.

The overall purpose of the field/laboratory experience requirement is to introduce students in the MS-PHMEID degree program to a supervised practical experience in a Public Health Laboratory or other qualifying public health entity from the perspective of the actual wet laboratory operations. Students that already have this laboratory experience will be introduced to epidemiologic research, particularly surveillance, and its tie-in with laboratories either in the United States or in an international setting. Fall, Spring, Summer.

PUBH 6050. Introduction to Health Services Delivery. 2 Credits.

Introduction to the US health services financing and delivery system with a focus on the major components of the system, the interaction of elements of the system, and the history of the development of today's system. Addresses the national context and history of health services, population health and health care spending in the US, employment-based health insurance, Medicaid and the uninsured, Medicare, international health care systems, managed care, hospitals and facilities, physicians and health workforce, long-term care and prescription drugs, and health care reform. (Same as HSML 6202) (Fall, spring, and summer).

PUBH 6090. Practicum/Culminating Exp. 4 Credits.

Individually tailored. Culminating Experience for the MPH program. Advisor approval required prior to registration. [For 45-credit MPH students who entered Summer 05, Fall 05, or Spring 06.] Summer, Fall, Spring.

PUBH 6091. Special Project. 1-4 Credits.

Under faculty supervision, the student undertakes an original project that applies the skills and knowledge gained in the chosen track and/or concentration within the MPH program. Prerequisite: Permission of the instructor. NOTE that credits vary by program; please consult your program plan to register for the appropriate number of credits. [For 36-credit MPH students only] Summer, Fall, Spring.

PUBH 6099. Topics in Public Health. 1-3 Credits.

A short seminar, open exclusively to doctoral candidates and structured to offer an intimate introductory experience to in-depth consideration of critical issues in health policy. FallIn-depth examination of a particular facet of public health. Topics and prerequisites vary. Summer, Fall, Spring.

PUBH 6121. Envrnmntl&OccptnlEpidemiology. 3 Credits.

Epidemiologic methods for the study of environmental and occupational health problems. Epidemiologic exposure assessment methods and methods relevant to cohort, case-control, cross-sectional, and cluster investigation studies. Sources of and evaluation of biases and confounding, as well as survey and questionnaire design. Prerequisites: PubH 6003, 6002, Fall.

PUBH 6122. Envir Policy, Politics, Progs. 3 Credits.

Reviews the history, structure and workings of the system through which we attempt to protect public health and the environment, with a particular focus on US regulatory agencies. Prerequisites: PubH 6004, Spring.

PUBH 6123. Toxicology: Applic for PH Pol. 3 Credits.

Introduction to principles of toxicology with emphasis on concepts most relevant in risk assessment, management, and communication; and public health policy. Prerequisite: college chemistry. Spring.

PUBH 6124. Problem Solving in EOH. 3 Credits.

This culminating course uses problem-based learning methods to examine a variety of real-world EOH issues in depth. Cases stimulate students to integrate their cumulative knowledge across all required courses and demonstrate their professional competencies. Students to conduct activities characteristic of EOH practice: evaluating a variety of technical, public, and media, reports; integrating and interpreting environmental, exposure, and health information effectively; designing analytic and communication strategies; presenting in writing and orally relevant materials to address EOH issues; and, making appropriate policy and/or program decisions and recommendations. Prerequisites: PubH 6121, 6123, 6126. Summer.

PUBH 6125. Intro-Children's Health & Env. 2 Credits.

Describes the impact of environmental toxicants on children's health and reviews some of the major policy issues in the field of children's environmental health. Prerequisites: PubH 6004. Fall.

PUBH 6126. Assessment&Control/Env Hazards. 3 Credits.

Introduces the anticipation, recognition, assessment, and control of hazards in the workplace and the ambient environment. It emphasizes an understanding of the characteristic features of specific hazards, which may be chemical, biological, or physical/ergonomic. Fall.

PUBH 6127. Germs: An Introduction to Environmental Health Microbiology. 2 Credits.

Basics of public health microbiology as it relates to the environment, food, water, and bioterrorism. Examines from an environmental health perspective how the principles of microbiology are applied to current and emerging public health issues, whether from intentional or unintentional contamination of the environment. Specific topics will include: industrial animal production and increasing prevalence of antibiotic resistance; effectiveness of various point of use technologies for water purification; recent advances in quantitative microbial risk assessment; one medicine (where public and veterinary health meet); detection strategies for microorganisms (including bioterrorism agents); and current approaches in food defense and agroterrorism. Prerequisites: PUBH 6004. (Spring).

PUBH 6128. Global Envrnmntl & Occptnl Hlth. 2 Credits.

Examines environmental and occupational health issues at various stages in the development process. Emphasis will be placed on principles of development economics and associated environmental health issues. Prerequisites: PubH 6004. Fall.

PUBH 6129. Problem Formulation in EOH. 1 Credit.

Focuses on formulation of EOH problems and the types and sources of information needed to identify and address EOH issues. Students will become skillful in accessing, utilizing, and evaluating information sources. The pedagogic basis for this course is problem-based learning. Pre- or co-requisite: PubH 6004. Fall.

PUBH 6130. Sustainable Energy & Environmt. 2 Credits.

Public Health professions play a vital role in shaping sustainable energy strategies in the context of environment & human health impacts. Sustainability of various energy strategies including energy conservation, green building principles and renewable energy. Mitigation & adaption policies for climate change. Emphasizes the life cycle framework which focuses on natural resource depletion, water & energy consumption as well as air, water & solid waste pollutant emissions. Prerequisite: PubH 6004. Spring.

PUBH 6131. Applied Data Analysis in EOH. 2 Credits.

Apply biostatistical concepts & methods to analysis of EOH data. Students manage datasets, conduct data analyses using Stata, present data graphically, & interpret data for relevance to EOH research, policy & practice. Skills developed and practiced will help students synthesize data, consider findings in terms of risk management options, and communicate findings for intended audiences. Prerequisites: PubH 6002, 6003, & 6004. Spring.

PUBH 6132. Design, Implementation and Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs. 1 Credit.

Course designed for students working in both disaster and development settings of developing countries where contaminated water, inadequate sanitation and poor hygiene (WASH) are the cause of serious health problems. Fundamental concepts will be taken from classroom to the field for first hand experience applying WASH methods. Prerequisite PubH 6004. Fall (Fall).

PUBH 6133. Social Dimen Clim Chnge & Hlth. 2 Credits.

Explore the drivers of climate change and outcomes with particular focus on health dimensions. Will address drivers, obstacles, vulnerabilities, inequality and adaptation as well as technical and social solutions.

PUBH 6134. Communication Science for PubH. 2 Credits.

Learn how to evaluate primary scientific literature & communicate research findings in outlets ranging from peer-reviewed journals to tweets. Identify target audiences & shape the message to maximize impact while staying true to supporting evidence. Prerequisites: PubH 6002, PubH 6003 Science-based research is the foundation to successful public health interventions, but research findings must be effectively communicated to the public health community, policymakers, and the general public before they can affect practice. In this course, students will learn how to evaluate the primary scientific literature and communicate research findings in outlets ranging from peer-reviewed journals to 140 character Tweets. Students will learn to identify their target audience and shape their message to maximize impact, while staying true to the supporting evidence. Written and oral communication as well as critical evaluation will be emphasized throughout this course.

PUBH 6199. Topics in EOH. 1-3 Credits.

In-depth examination of a particular facet of public health. Topics and prerequisites vary. Summer, Fall, Spring.

PUBH 6238. Molecular Epidemiology. 1 Credit.

Concepts, principles, and use of molecular methods in epidemiologic and clinical research. Common molecular measures and their interaction with environmental factors. Development of a framework for interpreting, assessing, and incorporating molecular measures in their area of research. Prerequisites: PubH 6003. (Summer).

PUBH 6239. Epidemiology of Foodborne and Waterborne Diseases. 1 Credit.

Foodborne and waterborne toxicants; diseases linked to eating and drinking and their prevention. Topics include transmission of disease and disease processes; microbial toxins, mycotoxins, chemical toxins, bacterial infections (e.g., salmonellosis, shigellosis, vibrio, listeria), virus and parasitic infections; issues in food and water safety. Prerequisites: PubH 6003. (Summer).

PUBH 6240. Pediatric HIV/AIDS. 1 Credit.

Comprehensive overview of HIV infection in children, with emphasis on the global pediatric HIV epidemic. Biological, epidemiological, clinical, and psychosocial issues; public health programmatic approaches to prevention, care, and treatment. The national and global experience with scaling up prevention services in the global effort to virtually eliminate HIV/AIDS in children. Prerequisites: PubH 6003. Recommended background: PubH 6250 and PubH 6253. (Summer).

PUBH 6241. Nutritional Epidemiology. 2 Credits.

Methodological issues related to dietary assessment, nutrition surveillance, and the epidemiology of obesity. Current trends, including the health impacts of vitamin D and sodium. Interpretation of the scientific literature in the field. Examples drawn from the National Health and Nutrition Examination Survey. Prerequisites: PubH 6003. (Fall).

PUBH 6242. ClinicalEpid&Decision Analysis. 2,3 Credits.

Quantitative and qualitative approaches to decision making, including risk-benefit analysis, decision analysis, and cost-effective analysis. Applications to technology assessment; development of clinical guidelines. Note: MPH Health Policy, MS Health Policy and Doctoral Students concurrently take PubH 6299 topics course by the same name for 1 credit, thereby enrolling for three total credits (PubH 6242=2 credits plus PubH 6299.xx, same name =1 credit). Prerequisites: PUBH 6002, PUBH 6003. (Spring).

PUBH 6243. Topics: ClinicalEpi&DecAnalysis. 1 Credit.

This class takes an evidence-based problem solving approach for Masters level students interested in the health policy focus of clinical epidemiology utilizing methods taught in PubH 6242. Prerequ: PubH 6003. Corequis: PubH 6242. Spring.

PUBH 6244. Cancer Epidemiology. 2 Credits.

Epidemiology of specific cancers, with an emphasis on molecular and genetic epidemiology. Current research in the field. Prerequisites: PubH 203. Spring.

PUBH 6245. InfectiousDisease Epidemiology. 2 Credits.

The role and conduct of laboratory and field investigations in the epidemiology of infectious diseases. Prerequisite: PubH 6003. Spring.

PUBH 6247. Design of Health Studies. 3 Credits.

Epidemiologic concepts and methods applied to specific research questions especially new types of public health problems. Recognition and development of the most appropriate study design for a specific health issue. Ecologic, cross-sectional, case-control, cohort studies and clinical trials. Sampling, measurement, questionnaire design, causality and causal criteria. Development of a research proposal. Co-requisite: PubH 6002. Prerequisite: PubH 6003. Fall, Spring.

PUBH 6249. StatPackages/DataMgt&DataAnlys. 3 Credits.

This course familiarizes the student with one of the most widely used database management systems and statistical analysis software packages, the SAS System, operating in a Windows environment. Throughout the course, several database management system techniques and data analytical strategies for the appropriate analysis of datasets obtained from a variety of studies will be presented. Statistical techniques covered include linear regression, analysis of variance, logistic regression, and survival analysis. Prerequisite: PubH 6002. Fall, Spring.

PUBH 6250. Epidemiology of HIV/AIDS. 2 Credits.

Methodological issues central to HIV/AIDS research. Biases peculiar to HIV/AIDS epidemiologic studies (both observational and experimental designs). The natural history of HIV, diagnosis, surveillance, vulnerable subpopulations, behavioral facets, and evaluation of epidemiologic studies with an emphasis on methodological considerations. Prerequisite: PubH 6003, Recommended PubH 6002. Fall.

PUBH 6252. Advanced Epidemiology Methods. 3 Credits.

Advanced quantitative epidemiologic methods, with a focus on basic data analytic techniques, identifying and evaluating bias and adjusting for confounding. Dose-response, trend analysis, and multiple linear and logistic regression models. Prerequisites: PubH 6002, 6003, 6247. Co- or prerequisite PubH 6249. Fall and Spring.

PUBH 6253. Issues in HIV Care & Treatment. 1 Credit.

This course will provide an overview and in depth consideration of some of the major issues in treatment of HIV disease, including the assessment of efficacy and effectiveness, drug resistance, monitoring of drug toxicity, special populations, the interrelationship between treatment and prevention, and quality of care. The course has been designed with an interdisciplinary audience in mind. In discussions and assignments, students will be able to emphasize their own area of interest and/or expertise (e.g. epidemiology, policy, etc). Fall.

PUBH 6255. Org Responses to HIV/Epidemic. 2 Credits.

This seminar focuses on the rapidly evolving responses of local, national and global governmental and non-governmental organizations to the HIV/AIDS epidemic. Inspirational leaders of selected HIV/AIDS organizations are invited to describe how their organizations contribute to fighting the epidemic; the leadership and management skills that they use in their daily work; and their strategic decision-making processes. Basic principles of epidemiology, leadership and organizational strategy and structure are addressed through didactic presentations and interactive faculty-student dialogue. Lessons learned through the lens of HIV/AIDS organizations are broadly applicable to other public health problems. Students will learn about the strengths and challenges of different types of public health organizations as they make career decisions about their own transition to the public health work force. Prerequisite: PubH 6003, HIV/AIDS experience, or permission of Instructor. Spring.

PUBH 6258. Adv Topics/Biostat Consulting. 1 Credit.

Principles and practice of biostatistical consulting in public health and medical research environments. Spring.

PUBH 6259. Epid Surveillance/PublicHealth. 2 Credits.

Focus on foundations of public health surveillance systems for communicable as well as chronic diseases. Outbreak investigation methods will be included, as well as surveillance data sources, data management, data analysis, ethical issues, surveillance system evaluation, and use of information for prevention. Surveillance systems for reportable diseases, nosocomial infections, bioterrorism events, cancer, environmental disease, vaccine-related adverse events, bovine spongiform encephalopathy, and military personnel will be discussed. Prerequisites: PubH 6003. Spring.

PUBH 6260. Adv DataAnalysis-Public Health. 3 Credits.

Advanced data analysis using the SAS System to expand on the analytic techniques gained in PubH 6002 and PubH 6249 and to provide students with the applied statistical skills required to analyze various types of public health datasets. Prerequisites: PubH 6002, 6249. Fall, Spring.

PUBH 6261. Epi-Bio Skills Bldg Seminar. 1 Credit.

Assists students in developing the skills needed to complete degree requirements and to provide them with practical applied public health training. By the end of the course, students will be able to describe essential skills needed for preparation, implementation, presentation and communication of public health data.

PUBH 6262. Intro-Geog Information Systems. 1 Credit.

Geographic information systems (GIS) for mapping and display of health data. The course makes use of ArcGIS 8.3. The use of spatial statistics for the detection of clusters and patterns in the spread of diseases. Working with geodatabases, shape files, layers, query information from attribute tables, geocode addresses and customizing GIS applications. Summer, Fall, Spring.

PUBH 6263. Advanced GIS. 1 Credit.

Provides mid to advanced level training in GIS for display and analysis of health data. Use software ArcGIS 9.3 and additional extensions such as Spatial Analyst and Geostatistical Analyst. Also uses GeoDa software. Emphasizes benefits of using GIS to do more than simply manage and map data. GIS supports a range of spatial analysis functions that enable researchers to extract additional meaning from manipulating geographic data. Learn to work with raster datasets and geodatabases to build spatial models for analyzing health data and evaluating spatial patterns of health events based on notion of distance. Prerequisite: PubH 6262. Fall, Spring.

PUBH 6264. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics will include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed will be Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: Math 1231, 1232 and PubH 6002, 6249. Spring.

PUBH 6265. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and so.

PUBH 6266. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6201-6202, PubH 6264. Fall.

PUBH 6267. Time Series: Applications in PH. 2 Credits.

Introduce basic concepts for the identification and modeling of time series in the time domain approach. Learn a new set of terminology standards and a different way to analyze these type of data and to forecast future values of a time series and its accuracy. Software used is SAS/ETS and 3 procedures: ARIMA, AUTOREG, FORECAST. New mathematical notation will be used. Prerequisite: PubH 6249. Spring.

PUBH 6268. Advanced SAS. 1 Credit.

Intensive in advanced programming using SAS. Expand technical skills to provide advanced SAS tools for data management and graphics. Topics to include Interactive Matrix Language (IML), SAS Macro facility language, and drill-down graphs using SAS/GRAPH. Prerequisites: PubH 6002, 6249 or Instructor's permission. Summer.

PUBH 6269. Reproductive Epidemiology. 1 Credit.

Current research, controversial issues and methodological problems in epidemiology of reproductive and perinatal health. Present reproductive health issues such as conception and infertility; perinatal issues such as complications of pregnancy, infections in pregnancy, adverse pregnancy outcomes, and birth defects. Prerequisite: PubH 6003. Summer.

PUBH 6270. HIV/AIDS Surveillance. 1 Credit.

Overview of surveillance methods used domestically and internationally to monitor HIV/AIDS epidemic. Surveillance systems including sentinel, population based, behavioral, and incidence surveillance will be presented and discussed. Strengths and weaknesses of these various systems will be discussed in addition to how data from these systems impact and inform HIV/AIDS related policies and programs. Prerequisite: PubH 6003. Summer.

PUBH 6271. Disaster Epidemiology. 1 Credit.

Introduction to disaster epidemiology that elucidates the important role epidemiologists play in assessing the health and psychological effects of natural and man-made disasters and in identifying factors that contribute to these effects. Focus will be on applications of epidemiologic methods to the study of public health consequences of disasters, case studies from actual disasters used to illustrate various roles of epidemiologist in responding to these events and lessons learned. Highlight key skills that epidemiologists need to be part of a response and recovery. Identify methodological issues for future work. Prerequisites: PubH 6002, 6003. Summer.

PUBH 6272. Infectious Agents- Cancer. 1 Credit.

Describes the role of infectious agents in the etiology of human cancer. Emphasis on differences between specific oncogenic viruses. Other oncogenic agents, bacterial and parasitic, will also be discussed. Discuss laboratory approaches to the documentation of their pathogenicity, how behavior affects mode of transmission, and which types of data provide strongest support for documenting oncogenic potential for humans. Prerequisite: PubH 6003. Summer.

PUBH 6273. Ethnographic Methods. 1 Credit.

Use ethnographic field methods in conjunction with epidemiological research. Introduction to specific methods used to examine health phenomena and determinants of disease. Learn specific applied skills that can be modified with socio-cultural modifications to evaluate urban sites and other settings. Basic skills in application of ethnographic methods, including recursive observations, participant observations, and variety of approaches to interviewing such as in-depth, structured and non-structured as well as conversational interviewing. Discuss use of multiple approaches in conjunction with ethnography, including focus groups, archival, document, statistical and secondary data analysis, and survey research methods. Course emphasizes use of ethnographic research methods in community-based health settings and evaluates issues in cultural competency and how to garner stakeholder support to conduct epidemiologic studies. Prerequisite: PubH 6003. Fall.

PUBH 6274. Emerging ID for PH Pro's. 2 Credits.

Focus on epidemiology of emerging infectious diseases of public health importance, including factors leading to their development, management of emerging infectious diseases from a public health and laboratory standpoint, including biosafety, and strategies for emergency preparedness from a national and international perspective. Course emphasizes the context of emerging infectious diseases and strategic approaches to their containment. Prerequisites: PubH 6003 or Micr 6292 or Instructor permission. Fall.

PUBH 6275. Essential PH Lab Skills. 2 Credits.

This course will provide public health students with practical laboratory experience. Prerequ: Micr 6239 or Micr 6212 or permission of instructor. Spring.

PUBH 6276. Health Microbiology. 3 Credits.

Gain in-depth understanding of important non-viral pathogens pertinent to PH Microbiology. Learn how to isolate & identify pathogens using critical thinking & problem solving skills.

PUBH 6277. Public Health Genomics. 2 Credits.

Learn about molecular technology and how it is impacting public health practice & discourse in the post genomic era. Explore ways in which genomics is being used to solve or help alleviate PH problems through case-focused discussions. Prerequisite: genetics or molecular biology within 6 years or permission of course instructor.

PUBH 6278. Public Health Virology. 3 Credits.

In-depth understanding of viral pathogenesis by focusing on current research, controversial issues and PH relevance. Survey of family of viruses most relevant to today's public health efforts, concentrating on virus-host interactions & therapeutic strategies.

PUBH 6280. MEID Final Project. 2 Credits.

Focus on the synthesis and summary of data acquired through epidemiologic and/or public health laboratory research. Prerequisites: PubH 6002, 6003, 6292, 6245; Biosafety training, CITI training, HIPAA training, permission of instructor.

PUBH 6281. Analysis of Complex Surveys Using SAS and Stata. 1 Credit.

An applied data analysis course focusing on procedures commonly used to analyze data from complex surveys such as the National Health and Nutrition Examination Survey. Review of various types of sampling, sample design focusing on core components of complex surveys, and the statistical justification and procedures for including design effects in analytic models. Application of these concepts to real data using SAS and Stata. Prerequisites: PubH 6003 and PubH 6249 or equivalent Stata course. (Summer).

PUBH 6282. Introduction to R Programming. 1 Credit.

R is an open source software environment for statistical computing and graphics. Data transfer between SAS and R, data manipulation and visualization within R, programming and debugging, R libraries, and graphics theory. Prerequisites: PubH 6249. Recommended background: Programming experience in a statistical package such as Stata or in high level language such as C, Python, Perl. (Summer).

PUBH 6283. Biostatistics Consulting Practicum. 1 Credit.

Supervised experience involving the synthesis of biostatistical skills with client consultation. Students consolidate their skills through an experience-based understanding of how biostatistical skills are utilized in one or more domains of health research. Prerequisites: STAT 6201 and PUBH 6003. Recommended background: PUBH 6249 or PUBH 6210. (Fall, spring, and summer).

PUBH 6299. Topics in Epi/Bio. 1-3 Credits.

In-depth examination of a particular facet of public health. Topics and prerequisites vary. Summer, Fall, Spring.

PUBH 6305. Fundamentals for Health Policy. 2 Credits.

Provides an overview of public health and health care in the United States as an introduction to the study and analysis of health policy. It covers the governmental framework, institutions, financing streams, workforce, constituencies, and interest groups engaged in the health sector to ensure that students begin their analytic policy training with grounding in the political, economic, and social realities of public health and health care. Fall, Spring, Summer.

PUBH 6310. Statistical Analysis in Health Policy. 3 Credits.

This course addresses how to use quantitative and statistical methods of data analysis for health policy and health services research. Learn how to conduct data analyses using Stata®, a widely used statistical and data analysis software package, and apply these skills for health policy and health services research purposes. The course builds upon the principles of statistics taught in PubH 6002 and reinforces these principles with practical hands-on experience in programming and analysis for health policy. Prerequisites: PubH 6002. (Fall, spring, and summer).

PUBH 6315. Intro-Health Policy Analysis. 2 Credits.

Core elements of health policy analysis: problem definition, background, the political, economic, and social landscape; development of policy options and recommendations. Written, graphic, and oral presentation skills associated with policy analysis. Prerequisites: PubH 6305. Summer, Fall, Spring.

PUBH 6320. Advanced Health Pol Analysis. 2 Credits.

Provides instruction in critical elements of health policy applications: problem definition; political, social, and economic assessment of a problem; program evaluation and data analysis; development of policy options; and the written and oral presentation of findings and recommendations. Hands-on application of basic quantitative tools in health policy. Prerequisite: PubH 6315. Offered Summer, Fall, Spring.

PUBH 6325. Fed Policymaking & Pol Advocacy. 2 Credits.

Provides students with an understanding of the federal health policymaking process, including an overview of the legislative, administrative, and judicial processes that impact federal health policymaking. Reviews the federal budget process and outlines the authorization and appropriation processes. Finally, the course uses an advocacy campaign framework to demonstrate common techniques and strategies used to advance legislative and regulatory policies including coalition building, the use of policy studies and media relations, among others. Prerequisite: PubH 6305. Fall, Spring, Summer.

PUBH 6330. Health Services and Law. 3 Credits.

This course addresses the relationship of law and the legal system in the U.S. to the individual health care delivery system. It examines how various sources of law affect the organization, delivery, and financing of health care, as well as the regulation of health care quality and patient rights. Summer, Fall, Spring.

PUBH 6335. Public Health and Law. 3 Credits.

Examines how law can both promote and impede the public's health. Introduces students to the legal concepts that underlie the public health system and that inform public health policymaking in the United States. Topics to be covered include the role of law in public health care and policy (e.g., governmental powers vs. civil liberties, regulation of public health, tobacco regulation), managed care and public health, the role of public health officials in shaping law and policy, and public health law reform. Spring.

PUBH 6340. Health Economics and Finance. 3 Credits.

Covers economic principles as they apply to health services financing and public health policy: provider payment policy and cost containment, supply of health providers and services, individual demand for health care services, and cost-benefit analyses and economic incentives to promote public health goals. Prerequisite: Basic Economics or instructor's permission. Fall, Spring.

PUBH 6345. Health Policy Research Design. 2 Credits.**PUBH 6352. Basics of Econ for Health Pol. 1 Credit.**

An introduction to modern microeconomics- the study of how consumers, firms, industries, and the public sector make decisions and allocate their resources in the economy. The principles of supply and demand and elasticity in both the private and public sectors will be analyzed. Fall.

PUBH 6354. Mental Health/Subst Abuse Pol. 2 Credits.

Provides an overview of the U.S. mental health and substance abuse delivery system, its components, and the policy challenges created by the organization of this system. Considers the behavioral health care system from the perspective of several main "actors" in the system: patients, providers (primarily doctors & hospitals), health plans, and payers (public & private). Prerequisite: PubH 6305. Fall.

PUBH 6356. State Health Policy. 2 Credits.

Provides practical understanding of state health policy and programs by placing the student in the position of developing a briefing on health and health care for a new governor. This is a hands-on class designed to replicate the experience of a newly appointed official "learning the ropes" in a particular state. Prerequisite: PubH 6305. Fall.

PUBH 6358. Vaccine Policy. 2 Credits.

Examines vaccine development, production, distribution, and delivery in the U.S. from the perspective of the influenza vaccine shortage. Highlights the interactions among the business, legal, political, public health, medical, federal/state/local government, and consumer communities that combine to influence immunization policy. Prerequisite: PubH 6305. Spring.

PUBH 6360. AdvMaternal&ChildHealthPolicy. 1 Credit.

In-depth exploration of maternal and child health policy in the U.S., with a particular emphasis on the role of personal and public health services for women, children, youth and their families in the context of health and human services system change. Prerequisite: PubH 6561. Spring.

PUBH 6362. Civil Rights Issue/Health Care. 2 Credits.

Examines the intersection of health care and civil rights law in the United States: the history and legacy of health care discrimination in the U.S.; the various forms of health care discrimination; legislative and regulatory interventions to combat discrimination and create/enforce/restore health care civil rights; and the unique place that abortion rights holds in U.S. law and society. Prerequisite: PubH 6330. Spring.

PUBH 6364. Fed Budget Process/Health Care. 1 Credit.

Focuses on how the Congressional budget process shapes the funding and design of federal health care programs, ranging from entitlement programs like Medicare to appropriated programs like community health centers. Discussions will cover budget resolutions, appropriations bills, and budget reconciliation legislation, as well as Congressional procedures & committees through which they are considered. Prerequisite: PubH 6305. Summer.

PUBH 6366. Hlth Care Corporate Compliance. 2 Credits.

Addresses the federal laws and regulations that affect U.S. health care industry participants, particularly those relating to the prevention of fraud and abuse, and the role of corporate compliance programs. Prerequisite: PubH 6330 or HSML 6215. Spring.

PUBH 6368. Law, Medicine, and Ethics. 2 Credits.

Designed to address those issues in law, ethics, and policy that focus on the scope and limits of individual autonomy within the health system. The specific foci are: reproductive health; human sexual relations; the refusal of potentially lifesaving medical treatment; assisted suicide; and research involving human subjects. Prerequisite: PubH 6330. Fall.

PUBH 6370. Medicare/Medicaid Law & Policy. 2 Credits.

Describes current legal and public policy issues in the Medicare and Medicaid programs, including the legal, operational, financial, and organizational rules for the two programs. Prerequisite: PubH 6315. Spring.

PUBH 6372. Minority Health Policy. 2 Credits.

Introduces students to the concept of health disparities and the implications of disparities for health care practice and policy. Students will learn how disparities are defined and measured, as well as emerging approaches in practice and policy to reducing disparities. Prerequisite: 6315. Fall.

PUBH 6374. Pharmaceutical Policy. 2 Credits.

Examines legal and regulatory frameworks related to the demand for and supply / quality of pharmaceutical products. Highlights policies specific to drug development, pricing, reimbursement, utilization, dissemination of information, and post-marketing surveillance. Prerequisite: PubH 6315. Fall.

PUBH 6376. Primary Health Care Policy. 2 Credits.

Explores the politics and policy of the provision of primary health care in the U.S. Covers the rise of the field of primary care and how it is supported and financed, and the role of insurers and government in regulation and oversight in the areas of access, cost, and quality. Prerequisite: PubH 6315.

PUBH 6378. HIV Policy in the U.S.. 2 Credits.

Examines various aspects of the policy response to HIV. The focus will be on how U.S. policy is shaped in terms of both domestic and global responses to the pandemic, i.e., who are the players and what are the processes for making U.S. policy. The course will also study specific timely policy questions facing policy makers at the time the course is offered. Summer.

PUBH 6380. Bridging HIT and Health Pol. 2 Credits.**PUBH 6382. Community Health Center Policy. 2 Credits.****PUBH 6384. Health Care Quality & Health P. 2 Credits.****PUBH 6399. Topics in Health Policy. 1-3 Credits.**

In-depth examination of a particular facet of public health policy. Topics and prerequisites vary. Summer, Fall, Spring.

PUBH 6400. Global Health Frameworks. 3 Credits.

Provides a foundation of the various frameworks and techniques used to study global health. The frameworks examined will include epidemiology, anthropology, economics, human rights, and ethics among others. The perspectives studied will provide an introduction and understanding of how global health issues are framed, structured and presented. Fall.

PUBH 6401. Comp Regional Determinants. 2 Credits.

Examines the set of social, cultural and economic issues most central to shaping health in each of the world's main regions. Overseas Learning Collaboration program in Bangladesh. Prerequisite: PubH 6400. Spring 2011 fee \$4,400. Fee varies by year.

PUBH 6402. Washington Seminar. 2 Credits.

This seminar course will provide an overview of global health policy and practice institutional resources in Washington DC. Students gain an understanding of how global health issues are framed, presented and biased in a multi-institutional setting. This is a collaborative learning exercise where simple web based tools will be used to develop a virtual classroom of the current global health policy and practice dialogue among Washington DC based governmental, multilateral, NGO, private sector and policy institutes. Fall, Spring.

PUBH 6403. Scientific Basis GH Intervntn. 2 Credits.

Introduces the scientific basis of global health interventions and how they address proximal and underlying determinants of health. Successful students will obtain a strong technical grounding in the determinants, biology and pathogenesis of specific diseases, for which affordable tools for prevention, control, and case management exist and are in use in public health practice. Fall, Spring.

PUBH 6410. Global Health Study Design. 2 Credits.

A foundation in the tools necessary for planning and designing research related to identifying and solving problems in global health: choosing an appropriate research topic and research question, understanding the relationships between hypotheses and study objectives, conducting a literature review, choosing a research design to achieve the project purpose, writing a research proposal including planning for the challenges of global health research, and achieving productive dissemination of findings. (Fall and spring).

PUBH 6411. Global Health Qualitative Research Methods. 2 Credits.

An introduction to qualitative data collection and analysis in global health settings. Methodologies include survey design, interviews, focus groups, and participant observation. Archival research and clinical trial research are also addressed. The set of methods most commonly used to collect qualitative data in global health settings. Students are enabled to prepare interview guides, conduct in-depth interviews, and analyze and document the results from a qualitative field project. Prerequisites: PUBH 6002 and PUBH 6410. (Spring and summer).

PUBH 6412. Global Health Quantitative Research Methods. 2 Credits.

Continuation of the series of global health methods courses. Examination of the fundamental concepts of empirical analysis and qualitative analysis, including open and axial coding, the basis of "grounded theory," and regression analysis. Prerequisites: PUBH 6002 and PUBH 6410. (Spring and summer).

PUBH 6416. Ethical and Cultural Issues in Global Health Research and Programs. 1 Credit.

Examine procedures and concerns for protecting communities and human subjects involved in public health programs and research. Consider cultural considerations integral to ethical conduct of public health research and programming in the global context. Discuss history behind rules and regulations that govern ethical principles around conduct of research involving human subjects. Consider contribution that awareness of cultural contexts where we work makes to ethical nature of our work as global health professionals. (Fall and spring).

PUBH 6430. Theories for Global Health Communication Interventions. 2 Credits.

Use of communication theory and methods in health promotion. Integration of multidisciplinary approaches to public health communication. Prerequisite: PUBH 6007, PUBH 6400. (Spring).

PUBH 6431. Global Health Communication Strategies and Skills. 3 Credits.

Students conduct qualitative research to evaluate health communication programs, assess readability level and suitability of written health education materials, conduct content analyses, and review/critique current health communication literature. Prerequisites: PubH 6430-Theories and Applications in Global Health Promotion (unless waived by professor) PubH 6007- Social and Behavioral Approaches to Public Health. (Fall and spring).

PUBH 6435. Global Health Program Development and Implementation. 2 Credits.

Basic concepts and principles of program development and implementation including data collection methods, decision making, and problem-solving techniques. Application of program development techniques to specific interventions. Prerequisites: PUBH 6400. (Spring and summer).

PUBH 6436. Global Health Program Mgt. 2 Credits.

Management concepts and techniques related to the implementation of health and development programs and projects. Theories of management: planning, monitoring, and budgeting; the role of the manager; management of human and other resources, communication and leadership; motivation, quality control, teamwork, organizational culture and ethics. Prerequisite: PubH 6400, and if DME concentration PubH 6435. Fall.

PUBH 6437. Case Study Methods for Global Health Evaluation. 2 Credits.

The specifics of case study research and evaluation methods and application of these methods to the evaluation of global health interventions and programs. The particular challenges of case study design, data collection, and data analysis, with critical assessment of the quality of case studies used in global health evaluations. Appropriate designs and methods for case study evaluation to maximize generalizability and produce findings that engage policymakers and donors. Refinement of skills in analyzing quantitative and qualitative data from a program evaluation perspective, and development of skills in interpreting, disseminating, and using the results from program evaluations. Prerequisites: PubH 6411, PubH 6412, PubH 6501. (Spring).

PUBH 6440. GH Econ & Finance. 2 Credits.

Fundamentals of macro- and microeconomics and financial analysis in international health including degree of centralization, public-private sector roles, and roles of international donor agencies. Prerequisite: PubH 6400. Spring.

PUBH 6441. Intnat'l Health Organizations. 2 Credits.

Provides an in-depth study of the historical development, structure and function of the institutions and initiatives constituting the international health system. Prerequisite: PubH 6400. Fall.

PUBH 6442. Comparative Global Health Systems. 2 Credits.

Examine national health systems, how they differ, and how they are performing. Health systems analyzed through four different lenses: health care organizations, health workforce development, health care financing, and health policy development. Compare health systems and health reforms in seven regions of the world and how health system performance might be improved. Course fee may apply. Prerequisite: PUBH 6400. (Fall).

PUBH 6443. Global Health Agreements and Conventions. 2 Credits.

Explores the impact of regulations, trade and human rights on health by examining the relevant international declarations, agreements and conventions. This course will examine a variety of topics including the impact of international trade agreements on health, the International Health Regulations and other regulations affecting global health, and the relationship between health and human rights. Prerequisite: PUBH 6400. (Spring).

PUBH 6480. Public Health in Complex Emergencies. 2 Credits.

Analyze security institutions, vulnerable groups, humanitarian operations and natural disasters and global security, the impact of global health threats such as HIV/AIDS, SARS, avian flu, tuberculosis and malaria on security institutions, vulnerable populations, civil/military cooperation, and humanitarian operations. Also explore the potential value of various institutions in mitigating global health threats and responding to humanitarian emergencies. Examine a range of scientific, policy, and program interventions designed to address these issues. Prerequisite: PUBH 6400. (Fall).

PUBH 6481. Global Mental Health. 2 Credits.

Focus on global mental health knowledge and public health policy implementation skills regarding the integration of mental health, public health, and primary care in diverse health systems and challenging cultural contexts. Prerequisite: PubH 6400. Spring.

PUBH 6482. Int'l Food and Nutrition. 2 Credits.

Examines the major food and nutrition problems internationally, and the policies and programs aimed at addressing food insecurity, under- and over- nutrition, and micronutrient deficiencies. Through a combination of lectures (some delivered by invited experts), discussion sessions, seminal literature, and policy/program critique, the course strives to provide the background knowledge, state of the art strategies, and analytical tools necessary for future work in international nutrition. Prerequisite: PubH 6400. Spring.

PUBH 6484. Prev&Cont of VectorBorne Dis.. 2 Credits.

Vector borne diseases involve a vector (carrier) that transmits a pathogen to a human host. This course introduces students to insects and other vectors that are responsible for transmission of diseases such as West Nile Virus, malaria, dengue fever, and elephantiasis. Students will learn how to recognize various disease vectors, how they transmit diseases, the diseases transmitted and methods for effective management and control. Fall.

PUBH 6485. Prev&Cont of Water&Sanit. Dis.. 1 Credit.

This course will focus on problems associated with providing adequate water and sanitation in developing countries and diseases like schistosomiasis, cholera, dysentery & typhoid. Innovative tools and solutions for improving water supply and sanitation in developing countries will also be discussed. Summer.

PUBH 6491. Public Health Leadership Seminar. 1 Credit.

Leadership lessons derived from the careers of a diverse group of successful executives and entrepreneurs from multiple sectors, including corporate, government, non-profit, and the arts. Development of skills for effective engagement with peers, personal network, potential employers, and business partners. Restricted to students who have faculty permission to register for course. (Fall, spring, and summer).

PUBH 6499. Topics in Global Health. 1-3 Credits.

Reviews current directions of global health advocacy in donor and implementing countries and challenges participants to create effective advocacy strategies for the future. Students will learn about state-of-the-art advocacy tactics including policy analysis, agenda setting, public mobilization/direct action, grassroots and grassroots tactics, advocacy partnerships, media and communications, celebrity activism, and advocacy impact planning. Students will complete a group paper that will impart them with the skills and experience necessary to incorporate advocacy and activism into their professional public health practice. Prerequisite: PubH 6400. Spring. *Pending approval of permanent course number. In-depth examination of a particular facet of global health. Topics and prerequisites vary. Summer, Fall, Spring.

PUBH 6500. Planning and Implementing Health Promotion Programs. 3 Credits.

Students develop skills to effectively plan, design, & implement programs that address public health problems for defined populations in a variety of settings. Prerequisites: PubH 6007. (Fall, spring, and summer).

PUBH 6501. Eval-HlthPromDiseasePrevPrgms. 3 Credits.

Provides students with the knowledge, competencies and skills to plan and implement and evaluation of health promotion-disease prevention programs for a defined population at risk. Prerequisite: PubH 6002, 6003, 6007, 6500. Fall, Spring.

PUBH 6502. Practical Data Analysis: PCH. 1 Credit.

Practical aspects of dataset creation, data management, rudimentary statistical analysis & tabular/graphical presentation of results in the user-friendly environments of PASW (formerly SPSS) and MS Excel. Students will create codebooks, enter & clean data, derive new variables from existing ones, choose appropriate analytical techniques & implement them, graph & tabulate results, and document & protect work. Examples will be drawn from commonly-encountered situations in prevention and community health, such as needs assessments & program evaluations. Prerequisites: PubH 6002, 6003 & 6500. Fall, Spring, Summer.

PUBH 6503. Intro to PubHlth Commnctn&Mktg. 3 Credits.

Communication theories and methods used in promoting health and preventing disease. Theoretical background in communication and behavior science and practical communication development methods. Prerequisite: PubH 6007. Fall, Spring.

PUBH 6504. Social and Behavioral Science Research Methods. 3 Credits.

The processes of study design, data collection, and analysis using SPSS for quantitative research in prevention and community health. All phases of the observational/survey research process considered sequentially, from formulation of research questions to preparation of the final report. Prerequisites: PubH 6002 and PubH 6007 or instructor permission. (Fall and spring).

PUBH 6510. COPC Principles and Practice. 3 Credits.

Theory and practice of community-oriented primary care, including an extended small group exercise carrying out a COPC project with a simulated community using Web-based data sets. Fall.

PUBH 6512. Comm-Oriented Primry Care Pol&Iss. 2 Credits.

Advanced work on COPC methods and policy, focusing on issues related to the provision of health care in underserved communities. Prerequisite: PubH 6510. Spring.

PUBH 6513. Community Health Management. 2 Credits.

Management and development of community health services. Builds upon principles for management and community-oriented primary care. Prerequisite: PubH 6510, 6003. Spring.

PUBH 6514. Preventing Health Disparities. 2 Credits.

Critical evaluation of the current issues in racial and ethnic Issues in health care. Introduces students to differences and disparities in the access, use, and health outcomes of health care in the US. Fall.

PUBH 6515. High Risk&Special Populations. 2 Credits.

Provides students with an overview of the methods to plan, implement and evaluation health promotion and education programs targeted towards high risk and special populations. The course will review the socioeconomic, political-economic, cultural and psychosocial factors of populations who are considered to be at high risk for specific health problems and efforts that have been addressed in current health promotion programs. Prerequisite: PubH 6007. Fall Alternate Years.

PUBH 6516. Community Health InfoResources. 2 Credits.

COPC and community health promotion require diverse information skills in order to assess community needs and strengths, determine priority health issues, analyze data, plan interventions, and evaluate programs. This course will introduce students to the information resources useful in planning and implementing COPC and community health projects that address racism. The selected resources will support methods for defining a community, characterizing a community's social and health characteristics, investigating a prioritized problem, and developing programs and solutions. Students will learn how to choose resources, search them, and consider bias in information sources.

PUBH 6530. Qual Methods/Hlth Promotion. 2 Credits.

Application of qualitative methods in the development of health promotion interventions, evaluations, and research. Collecting and analyzing qualitative data through participant observation, interviewing, group methods, and case studies. Prerequisite: PubH 6007. Spring.

PUBH 6531. HlthPromotion/HlthCareSettings. 2 Credits.

Behavioral change counseling and training skills to improve health by changing individuals' behaviors and by developing training materials for use with providers, health professionals and high risk groups. This is an advanced course for second year students. Prerequisite: PubH 6007, 6500. Spring.

PUBH 6532. Commnty Org,Devlpmnt&Advocacy. 3 Credits.

Educates health promotion practitioners in how to organize community groups to promote health. The focus is on learning how to use resources available in the community to advocate change. Prerequisite: PubH 6007. Fall.

PUBH 6533. Design of Comm Health Surveys. 2 Credits.

This course teaches students how to frame questions in health promotion surveys using sound principles of questionnaire design with emphasis on reliability and validity. Students learn survey design principles and methods and how to analyze survey data.

PUBH 6534. Comm-Based Participatory Res. 1 Credit.

Students learn how to conduct community research in collaboration with community leaders and residents. This course emphasizes the principles of CBPR for addressing health promotion issues in communities including community needs and administrative and policy changes.

PUBH 6535. Promotion of Mental Health. 2 Credits.

Increases understanding about issues in mental health promotion. The emphasis is on mental health as a public health issue and linkages between individual mental health and the environment. Prerequisite: PubH 6007. Summer.

PUBH 6536. Workplace Health Promotion. 2 Credits.

Planning, management and evaluation of programs designed to serve employees' needs, promotion of employee health and reduction of health care costs in the workplace. Prerequisite: PubH 6007. Summer.

PUBH 6537. Health Promotion & Aging. 2 Credits.

Introduces students to the basic health aspects of the aging process and special health promotion needs for this group. Problems of aging and public health solutions for older Americans will be examined. Students will be able to define the public health concerns for aging Americans, how aging is affected by a multitude of factors, identify health promotion strategies to assist in reaching out to this population and develop methods of collaboration with agencies and organizations to improve the health of the aging population. Prerequisite: PubH 6007. Summer.

PUBH 6550. Maternal & Child Health I. 3 Credits.

Public health issues affecting the health and well-being of women, children, and families. A multidisciplinary perspective that integrates the biological, demographic, epidemiological, economic, behavioral, social, cultural and environmental aspects. Spring.

PUBH 6551. Maternal & Child Health II. 3 Credits.**PUBH 6552. Women's Health. 2 Credits.**

Issues of women's health through the life cycle. The process of critically evaluating women's health research and issues. Spring.

PUBH 6553. Adolescent Health. 2 Credits.

Issues of physical, mental, and social development and their bearing on the health of adolescents, with special emphasis on prevention. Fall.

PUBH 6554. Children & Youth/Special Needs. 2 Credits.

In order to place children and youth with special needs into a public health framework, this course presents an introduction to and an overview of children and youth with special needs due to a developmental disability. Many aspects of developmental disability will be addressed including 'concept' and definitions of disability, causes, epidemiological considerations, and development of federal legislation. The scope and range of developmental disabilities will be reviewed along with classification schemes. Both national and international distributions will be considered from a sociopolitical viewpoint. Fall.

PUBH 6555. Reproductive Health: US & Global Perspective. 2 Credits.

Reproductive health from a variety of public health perspectives, from defining reproductive health, past perspectives, needed improvements, and the factors that influence reproductive health. Fall.

PUBH 6556. Maternal & Child Nutrition. 2 Credits.

Covers the nutritional needs of women during the child bearing years, infants, children and adolescents. The course emphasizes the life course approach to nutrition and has a special emphasis on the effects of diet during infancy on obesity and degenerative diseases in later life. Students will examine the biological basis of nutrition, identify risk factors associated with poor nutrition in individuals and populations and evaluate domestic and international programs. Summer (1-credit) and Spring (2-credits).

PUBH 6557. Child Development & Public Health. 2 Credits.

Examination of the development of children from a public health perspective and provide a detailed examination of the indicators of children's health that are needed to assist public health professionals improve children's health. Fall.

PUBH 6558. Women, Gender and Health. 2 Credits.

Focuses on gender as a social determinant of health. Emphasis will be placed on examining the frameworks that are used in public health research to understand gender-based issues and how these frameworks affect the types of programs and intervention efforts developed. Spring.

PUBH 6559. HIV Prevention: Interdisciplinary Approach. 2 Credits.

Provides an interdisciplinary overview of HIV prevention research from the behavioral, biological and biomedical perspective. Students are encouraged to approach the assignments and discussions from their own particular expertise and career interests/goals.

PUBH 6560. School Health and Safety. 1,2 Credit.

Examines the history, organization, financing, and politics of school health programs. It will provide an overview of the core components of school health as defined by the Center for Disease Control and Prevention: health services, health education, physical education, nutrition services, counseling or mental health, school environmental health, health promotion, and family/community involvement. Summer (1 credit); Spring (2 credits).

PUBH 6561. Maternal & Child Health Policy Analysis. 2 Credits.

Provides instruction in maternal and child health policy in the U.S. with a particular emphasis on policies related to the organization, financing, delivery, and quality oversight of personal health services for mothers and children.

PUBH 6562. Physical Activity and Obesity Interventions: From the Individual to the Environment. 2 Credits.

This course will broadly examine the public health issues related to physical activity and obesity, particularly as they relate to solutions for addressing individual factors and the obesogenic environment. Students will gain a further understanding of the social, physiological, behavioral, and environmental factors related to both obesity and physical activity. The course will focus on examining multiple levels of solutions, specifically: 1) individual and behavioral interventions; 2) school-based and community-level interventions; 3) environmental interventions; 4) policy-level interventions. Students will be expected to critically evaluate the necessary components of interventions, and apply that knowledge to future programmatic efforts.

PUBH 6570. Advanced Public Health Communication: Theory & Practice. 3 Credits.

Focuses on the use of communication to positively influence people's – and population's – understanding of health information, decision-making, and health behavior. In this skills-based course students will study, and in a group project apply, a range of theories and techniques germane to effective message design and delivery. Prereq: PubH 6503. Fall.

PUBH 6571. Social Marketing: Theory & Practice. 3 Credits.

Focuses on the use of marketing to change the behavior of people, populations, and policy makers in ways that are in their, and society's, best interest. Students in this skills-based course will study and work in teams to apply a range of marketing strategies to a real-world situation. Prereq: PubH 6503. Spring.

PUBH 6572. Marketing Research for Public Health. 3 Credits.

Focuses on the use of marketing research techniques to better understand customers of public health programs, and thereby to improve program design, implementation, and effectiveness. A range of qualitative and quantitative techniques will be studied for their relevance to program planning, development, and continuous improvement. Spring.

PUBH 6573. Media Advocacy for Public Health. 3 Credits.

Focuses on the use of communication to positively influence public policy and public opinion. In this skills-based course students will study and apply a range of theories and techniques germane to the policy advocacy process. Prereq: PubH 6503. Spring.

PUBH 6574. Public Health Branding Theory & Practice. 2 Credits.

This course focuses on the use of branding in the public health and social sectors. Learning from the commercial sector, we will examine how to brand behaviors as well as products and services. We will review branding methods, examine research on branding and its effectiveness, and build skills in branding for public health objectives. Fall.

PUBH 6575. CommunSkills for PubHProfsnls. 1 Credit.

Helps students develop writing and oral presentation skills through intensive, interactive training, practice, and feedback. Provides participants with a solid foundation for all forms of public health and other scientific and technical written and oral communication. Fall, Spring.

PUBH 6590. Intro Social Entrepreneurship. 2 Credits.

Examine innovative organizations created to improve people's lives and contribute to improved social & economic conditions. Course emphasis on how such organizations are started, how they are sustained, and the various business models that are adopted to achieve an organizational mission. Summer.

PUBH 6591. PA/MPH Clin Leadership Seminar. 2 Credits.

Provides first year Physician Assistant/Master of Public Health students with an orientation to their roles as health professionals with special emphasis on preventive and community medicine.

PUBH 6599. Topics in PCH. 1-3 Credits.

In-depth examination of a particular facet of prevention and community health. Topics and prerequisites vary. Summer, Fall, Spring.

PUBH 6610. Public Health Nutrition Practice and Leadership. 1 Credit.

This course provides an overview of public health nutrition practice. Students develop communication, management and leadership skills necessary for successful careers. Students will also explore potential practicum and culminating experience options, and how to use these experiences to achieve their career goals. This course is designed for first year students in the public health nutrition MPH program.

PUBH 6611. Nutrition Assessment. 2 Credits.

This course examines the anthropometric, biochemical, clinical and dietary methods for assessing nutritional status in individuals. The process of conducting a food and nutrition environment assessments will also be addressed.

PUBH 6612. Food and Water Systems in Public Health. 2 Credits.

This course will take a systems approach to understanding food and water systems and the associated public health issues. We will discuss how our current food system evolved, and how issues such as climate change and population growth may affect food and water systems in the future. The role of public health practitioners in meeting the population's need for safe, sufficient and nutritious food and clean drinking water will be discussed. The course will also examine policies, programs, and proposals aimed at creating healthier, more sustainable food and water systems. (Fall, spring, and summer).

PUBH 6613. US Food Politics and Policy. 2 Credits.

The programs, regulations and legislation that pertain to food production, food safety, nutrition assistance and dietary guidance in the United States at the federal, state and local levels. (Spring).

PUBH 8242. DPH Topics:ClinEpi&DecAnalysis. 1 Credit.

An evidence-based problem solving approach for doctoral level students utilizing methods taught in PubH 6242. Prerequisite: PubH 6002, PubH 6003. Corequis: PubH 6242. Spring.

PUBH 8244. DPH Topics:Cancer Epidemiology. 1 Credit.

Course focuses on critical review and interpretation of cancer epidemiology literature as well as issues in research design in the field. Prerequ:PubH 6001 & PubH 6003. Corequis: PubH 6244. Spring.

PUBH 8245. DPH Topics:InfectDiseaseEpi. 1 Credit.

Provides doctoral level material on the content of infectious disease epidemiology. The course focuses on critical review and interpretation of infectious disease literature as well as issues preparing an analytic research paper on an emerging infectious disease and the application of tools used to describe the epidemiology of those diseases. Prerequ: PubH 6003. Corequis: PubH 6245. Spring.

PUBH 8250. DPH Topics: Epi of HIV/AIDS. 1 Credit.

Students select specific topic within area of HIV/AIDS epidemiology. Options include responding to a data analysis problem; responding to a methodological problem found within HIV/AIDS research; or another topic approved by instructor. Prerequ: PubH 6001 & PubH 6003. Corequis: PubH 6250. Fall.

PUBH 8259. DPH Topics:EpiSurveillanceinPH. 1 Credit.

Course provides doctoral level material on the content of surveillance offered in PubH 6259. Focus is on critical review and interpretation of surveillance literature as well as issues preparing an analytic research paper. Prerequ: PubH 6002 & PubH 6003. Corequis: PubH 6259. Spring.

PUBH 8364. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics will include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed will be Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: Math 1231, 1232 and PubH 6002, 6249. Spring.

PUBH 8365. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sampling. Ethics of clinical trials and the intention-to-treat principle. Prerequisite: PubH 6002. Spring.

PUBH 8366. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6202 or Instructor's permission, Fall.

PUBH 8401. Found PH Leadership & Practice. 3 Credits.

This interactive seminar course provides doctoral students a fundamental understanding of the history and current issues associated with the four principal program areas: Health Policy, Health Behavior, Global Health & Environmental & Occupational Health. Fall.

PUBH 8402. Ldrshp/PublicHlthPractc&Policy. 2 Credits.

Principles of public health practice and policy with a focus on the interdisciplinary and strategic application of skills, knowledge and competencies necessary both to perform public health core functions and to enhance the capacity to perform these functions. Spring.

PUBH 8404. AdvTpc-HlthSysms&HlthPolRsrch. 3 Credits.

Examination and assessment of issues related to the intersection of healthcare systems and health policy, and how health policy and health services research can inform the development and evaluation of healthcare systems and health policy. Prereq: PubH 6315. Spring.

PUBH 8405. Adv Health Economics Research. 3 Credits.

Examines a range of critical financing issues for U.S. public health and health care services/systems. Considers the role of health services research in (1) understanding the effects of these issues and (2) informing the deliberations and decisions of policymakers. Prereq: PubH 6340. Fall.

PUBH 8406. AdvTpc-HlthResrch/GlobalArena. 3 Credits.

Alternative field methods adopted from sociology, anthropology, economics, and political sciences for social sciences and policy research. Builds data collection, instruments, measurements, indicators, and data analysis and interpretation skills in specific socio-cultural contexts. Explores ethical issues in international research. Fall.

PUBH 8407. AdvTpc-HlthLdrshp/IntlSettings. 3 Credits.

A participatory graduate seminar providing a continuity bridge for departmental DrPH students progressing into the second and third years of academic study. Designated to provide students with the tools and experience needed to build their capacity for leadership in global health. Prerequisite: PubH 8406. As needed.

PUBH 8408. AdvTpc-HlthBehavRes&PractcAppl. 3 Credits.

Advanced topics relating theory to practice in areas of health education and behavioral change. Application of qualitative and quantitative research to health related behavior at individual and community levels. Spring.

PUBH 8409. AdvTpc-Health Comm Research. 3 Credits.

Examines the methods of communications research designated to alter health behavior. Emphasis placed on critical analysis of communications research aimed at the mass public, groups, and interpersonal level. Prerequisite: PubH 8408.

PUBH 8410. Doctoral Social Mrktng Applic. 3 Credits.

Advanced topics relating social marketing research in areas of health education and behavioral change. Application of social marketing practice to health related behavior at individual and community levels. Prerequisites: PubH 6572.

PUBH 8411. AdvTpc-PrinEnvHlthRiskScience. 3 Credits.

Environmental health (EH) risk analysis paradigms and the sciences that contribute to recognizing, characterizing, and responding to EH risks. The strengths and weaknesses of the fundamental principles, methods, and products of these sciences will be explored through discussion of case studies and current issues. A range of EH problems will be used to illustrate scientific conflicts and variations in practical applications. Prerequisite: PubH 6121, 6123, 6126 or instructor's permission. Fall.

PUBH 8412. AdvTpc-Env&OccHlthRsrch&Practc. 3 Credits.

Discussion of case studies emphasizing study design, methods, measurements, ethical issues, and procedures. Focus on interdisciplinary research, practice, & policy strategies appropriate for workplace and community settings. Prereq: PubH 6122 or instructor's permission. Fall.

PUBH 8413. Research Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their research methods and analytic skills. These activities include participating in the development and submission of sponsored research proposals; being formally affiliated with a research project, assuming responsibility for completing a real-world research project; engaging in empirical data collection and analysis efforts.

PUBH 8414. Policy/Management Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their management, leadership and policymaking skills as applied to problem solving in real-world settings, such as public health departments, community health centers, legislative settings, and public or teaching hospitals.

PUBH 8415. Instructional Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their teaching skills. These activities include course development, teaching master's level courses, acting as TA for undergraduate courses, advising students about their class performance, evaluating student performance, and developing remedial programs for students.

PUBH 8416. Study Design & Evaluation Methods. 3 Credits.

Prepares doctoral students to design and conduct program and policy evaluation in public health. Intensive introduction to the principles of study program design and evaluation research emphasizing the ability to synthesize the population-based intervention literature, apply planning and management methods, describe and apply research methods from a range of disciplines, and prepare a program research proposal. Fall (Fall, spring, and summer).

PUBH 8417. Qual Research Methods&Analysis. 3 Credits.

Techniques for designing and conducting qualitative research and for analyzing and reporting qualitative data relevant to program development and implementation, community assessment, and policy analysis. Prerequisite: PubH 8416. Summer.

PUBH 8418. Applied Statistical Analysis. 3 Credits.

Intensive course in data management and data analysis using STATA®. Database management system techniques and data analytical strategies for the appropriate analysis of data sets obtained from a variety of studies will be presented. The student will manipulate national data sets from epidemiological studies as well as Demographic and Health Survey (DHS) data. Prereq: PubH 8416. Spring (Fall, spring, and summer).

PUBH 8419. Measmnt/PubHlth&HlthSrvcsRes. 3 Credits.

In this course students review principles of measurement and assessment as they apply to public health and health services research constructs, review existing state-of-the-art measures of individual and population health status (e.g., morbidity, mortality, functioning and health-related quality of life) and of individual and community health behavior, and explore current measurement issues in health research. Prerequisite: PubH 8418. Spring.

PUBH 8420. Advanced Analysis & Dissemination. 3 Credits.

Advanced multivariate data analyses of complex datasets and programs, including advanced cross-sectional techniques, time-series analysis, and the use of panel data. Evaluation of results, and dissemination of findings to relevant stakeholders. Prereq: PubH 8417, 8418. Fall (Fall, spring, and summer).

PUBH 8422. AdvHlthCare&PublicHlthRsrchDes. 2 Credits.

Design of protocol suitable for implementation as part of Doctor of Public Health dissertation requirement. Prerequisites: Passing Comprehensive Exams, Approval of the Program Director, and a page-long abstract that includes the following: Student Name, Program Director, Faculty Advisor if different from the Program Director, Title, Objective (including population), Research Methods and Analysis Methods, Anticipated Results/Hypotheses. Grade = Credit/No Credit. Fall, Spring.

PUBH 8423. Dissertation Research. 1-12 Credits.

Dissertation Research for DrPH. Prereq: PubH 8422.

PUBH 8999. Dissertation Research. 1-12 Credits.

(Fall, spring, and summer).

PUBLIC POLICY (PPOL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PUBLIC POLICY AND PUBLIC ADMIN (PPPA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PPPA 1000. Dean's Seminar. 3 Credits.**PPPA 2000. Justice and the Legal System I. 3 Credits.**

The structure and function of constitutional law: the Supreme Court as an institution, how its cases are decided, and effects of its decisions on the political and social life of the country.

PPPA 2001. Justice and the Legal System II. 3 Credits.

Continuation of PPPA 2000. The structure and function of constitutional law: the Supreme Court as an institution, how its cases are decided, and effects of its decisions on the political and social life of the country. PPPA 2000 is prerequisite to PPPA 2001, which focuses on the First Amendment.

PPPA 2117. Executive Branch Politics. 3 Credits.

Contemporary concepts and issues in public administration and management. Major trends and approaches to governmental administration in the U.S., including the changing federal role, roles of the public sector in relation to the private sector, and managing public agencies at all levels. Same as PSC 2217.

PPPA 2701. Sustainability and Environmental Policy. 3 Credits.

A survey of the intersection of the principles of sustainability and the set of public policies that affect environmental management in the United States. Consideration of the idea that environmental policy is inevitably implemented in a complex interaction of both natural and human systems. Topics applicable to most environmental policy debates, such as the balance between costs and benefits of environmental protection. Introduction to a “toolkit” of environmental policy instruments ranging from highly prescriptive command-and-control regulations to flexible market-based policies. (Fall).

PPPA 6000. Cross-Sectoral Governance in the U.S. Federal System. 1 Credit.

Introduction to the roles and responsibilities of the public, nonprofit, and for-profit sectors in the delivery of public goods and services. (Fall).

PPPA 6001. Introduction to Public Service and Administration. 3 Credits.

Introduction to the discipline of public administration. The intellectual traditions and theoretical frames of reference that inform public administration as a field of professional practice and study. Current and continuing challenges and controversies. (Fall).

PPPA 6002. Research Methods and Applied Statistics. 0-3 Credits.

Development of skills and knowledge for conducting original research and critically evaluating empirical studies. Various research designs and data collection techniques are examined. Focus on computerizing data sets for quantitative analysis, analyzing strength of relationships, selecting appropriate statistical techniques, and testing statistical hypotheses.

PPPA 6003. Economics for Public Decision Making. 3 Credits.

The basic tools and concepts in microeconomic analysis; how these tools can be useful in public decision making. (Fall and spring).

PPPA 6004. Leadership in Public Administration and Public Policy. 3 Credits.

Organizational dynamics, management approaches, and workplace relationships that affect behavior in public organizations. Prerequisite: PPPA 6001.

PPPA 6005. Public Budgeting, Revenue, and Expenditure Analysis. 3 Credits.

Survey course that focuses on the institutions and analytical tools associated with raising revenue and allocating/managing resources at all levels of government. Hands-on budgeting skills and communication of analysis to decision makers. Prerequisite: PPPA 6003.

PPPA 6006. Policy Analysis. 3 Credits.

Development of skills in conducting and critiquing policy analyses. Application of methodologies used in analyzing possible consequences of specified alternatives as applied in the public policy decision-making process. Appropriate applications and limitations of policy analysis and its relationship to politics and the policy process.

PPPA 6008. M.P.A./M.P.P. Capstone. 3 Credits.

For M.P.A. and M.P.P. students who will complete their degree program at the end of the fall semester, this course substitutes for PPPA 6009 and 6119, respectively. (Fall).

PPPA 6009. MPA Capstone. 3 Credits.

Review of concepts and issues; analysis and integration of ethical, political, economic, managerial, and personal values and issues in the field. (Spring).

PPPA 6010. Politics & The Policy Process. 3 Credits.

The role of policy analysts in public policymaking. The impact that the political, economic, cultural, and bureaucratic context has on the policymaking process and outcomes. Political and ethical issues raised by the intricate interface of the private, not-for-profit, and public sectors in public policy formulation and implementation.

PPPA 6011. Introduction to Public Policy. 3 Credits.

Foundations of the field of public policy, emphasizing the role of policy analysts in the policymaking process. Topics include agenda setting, decisionmaking, policy implementation, program evaluation, and policy feedback.

PPPA 6013. Econometrics–Policy Research I. 3 Credits.

Multivariate research methods in policy analysis Prerequisite: PPPA 6002 . Laboratory fee.

PPPA 6014. Economics in Policy Analysis. 3 Credits.

The application of intermediate microeconomic theory to the study of public policy. Topics include models of individual choice in policy analysis, policy aspects of models of the firm, theory of market failure and welfare economics, and resource allocation decisions in the public sector. Credit cannot be earned for both PPPA 6014 and SMPP 6206. Prerequisites: PPPA 6085. Recommended background: An intermediate-level microeconomic theory course such as ECON 6217. (Fall and spring).

PPPA 6015. Benefit-Cost Analysis. 3 Credits.

The application of microeconomic theory and welfare economics to the empirical evaluation of public policies and programs. Applied welfare economics as a framework for policy analysis; empirical measures of welfare change; techniques of benefit-cost analysis. Prerequisite: PPPA 6014.

PPPA 6016. Public and Nonprofit Program Evaluation. 3 Credits.

Theory and practice of program evaluation and evaluative research. Exploration of scope and limitations of current practice in evaluation, considering economic, political, social, and administrative factors. Examination of methodological considerations for design, data collection, analysis, and dissemination. Prerequisite: PPPA 6002 .

PPPA 6018. Public Policy, Governance, and the Global Market. 3 Credits.

The socioeconomic foundations of government regulation and public policy cooperation for the governance of firms, markets, and globalization. The evolution of national, transatlantic, and multilateral frameworks for market and civil society governance, international competition policy cooperation, regulatory harmonization, and industry standards.

PPPA 6019. MPP Capstone. 3 Credits.

Policy theory and typologies; policy formulation, implementation, and evaluation; ethics and practice in policy analysis, processes, content, and contexts; policy linkages to multiple disciplines. Students submit an analysis of a substantive policy primarily utilizing resources in the D.C. region. (Spring).

PPPA 6024. Leadership in Complex Organizations. 3 Credits.

What the manager must know and do to provide leadership and guidance in large, complex organizations. An exploration of leadership theories and the factors and processes that condition effective leadership. (Spring).

PPPA 6025. Ethics and Public Values. 3 Credits.

Ethical dimensions of personal and professional judgments of public officials. Cases are used to consider the ethos of public organizations and the moral foundations of public policy. (Fall).

PPPA 6031. Governing and Managing Nonprofit Organizations. 3 Credits.

Historical, legal, and social foundations of the nonprofit sector. Developing organizational strategy and capacity; managing staff, boards, and volunteers; financial management; fund raising, marketing, public advocacy, and other external relations; partnerships and entrepreneurial activities; measuring performance; and policy issues.

PPPA 6032. Managing Fund Raising and Philanthropy. 3 Credits.

Fund-raising for nonprofit organizations and the management of relationships between donors and recipient organizations. Positioning the organization for fund raising; roles of staff and volunteers; principal techniques for identifying, cultivating, and soliciting donors; ethical principles; emerging trends; and relevant policy issues.

PPPA 6033. Non-Profit Enterprise. 3 Credits.

The use of business methods by nonprofit organizations, commercialization in the nonprofit sector, and the relationship between nonprofit and for-profit entities in pursuing social purposes. Case studies.

PPPA 6034. Managing Nonprofit Boards. 3 Credits.

Overview of the responsibilities, roles, and management of nonprofit boards. The emphasis is on governing boards, but advisory councils and boards of other types are also considered.

PPPA 6042. Managing State and Local Governments. 3 Credits.

Examination of state and local governmental structures and functions, their place within the federal system, their revenue sources, their limitations, and the alternatives available to encourage more effective administration to meet public and private demands. (Fall).

PPPA 6043. Land Use Planning and Community Development. 3 Credits.

Theory and practice of land use planning. Issues of competing land uses in an era of increased sprawl, population pressure, and environmental threat. Growth management techniques and practices in states and localities; the use of various regulatory controls and economic incentives to achieve desired outcomes. The idea of "sustainable community." (Spring).

PPPA 6044. State Politics and Policy. 3 Credits.

Important concepts of state politics and government with emphasis on how those concepts affect the formulation and implementation of policy. The functions of state government and the political, economic, and legal factors that shape state public policies. (Spring).

PPPA 6048. Financing State and Local Government. 3 Credits.

Analysis of the theory and practice of public finance in state and local governments. Includes the financing of services through municipal taxation, intergovernmental funds, debt instruments, and other revenue sources. Review of expenditures as well as financial management practices. (Spring).

PPPA 6049. Urban and Regional Policy Analysis. 3 Credits.

Examination of selected national policies and their effects on urban areas and governments. Emphasis on policy dimensions of urban systems and their relationship to the social, political, and economic context. Against the background of urban politics and administration, areas of health, education, welfare, manpower, transportation, and housing are addressed. (Spring).

PPPA 6051. Governmental Budgeting. 3 Credits.

Survey of the actors, institutions, and processes in the federal budgeting system. Executive budget preparation/execution, legislative review and approval of budget requirements, and independent audit of government spending. (Fall).

PPPA 6052. Tax Policy Analysis. 3 Credits.

This course provides a guided, critical study of budgeting by the U.S. Government: its conceptual foundations, structure, processes, accounting, scoring, and results. This process is evaluated, as a system and by its component elements, using the criteria of performance with respect to its fundamental objectives; fiscal and economic stability and efficiency, including for those programs aimed at promoting equity. Because of the dominant role of the Congress in the budget process, attention is focused on the system and process created by the Congressional Budget Act of 1974.

PPPA 6053. Financial Management for Public and Nonprofit Organizations. 3 Credits.

Intensive analysis, using the case study approach, of concepts and principles used in the not-for-profit sector for financial management purposes. Disciplines of accounting, budgeting, operations control, management, and auditing are integrated into comprehensive management control systems and include issues of system design and implementation. (Spring).

PPPA 6054. Issues in Federal Budgeting. 3 Credits.

Policy tools available to pursue social objectives, including grants, loans, contracting out, regulation, tax credits, and tax expenditures. Focus on criteria such as effectiveness, efficiency, equity, legitimacy, and administrative ease. (Summer).

PPPA 6055. Contracting Out and Public-Private Partnerships. 3 Credits.

Contracting out and public-private partnerships as methods of delivering government goods and services. Policy and implementation issues, including when and how contracting out may provide a more efficient and effective method of delivering government goods and services.

PPPA 6056. Regulatory Comment Clinic. 3 Credits.

Survey of regulatory theories, institutions, policies, and procedures. Application of economic tools to analyze the effect of existing and proposed regulations on social welfare. Communication of analysis to decision makers and the public. (Spring).

PPPA 6057. International Development Administration. 3 Credits.

An institutional and policy context for work in the international development industry. Mainstream policies, reform efforts, and alternative approaches. Major actors, selected policy areas, and regional and comparative perspectives.

PPPA 6058. International Development NGO Management. 3 Credits.

Provides an understanding of the primary implementers of international development assistance. Overview of NGO management, highlighting those features that are particular to NGOs active in international development, including NGO relations with government and donors. Recommended: PPPA 6057 or approval of instructor.

PPPA 6059. International Development Management Processes and Tools. 3 Credits.

Training in development management tools and processes; application of international development approaches specific to the development management profession. Key theories and perspectives of community development and development management. Recommended: PPPA 6057 or approval of instructor.

PPPA 6060. Policy Formulation and Administration. 3 Credits.

Impact of economic and political factors on public policy formulation and implementation; intensive analysis of the analytical, normative, and decision-making models of the policy process with special emphasis on their relationship to current policy problems. (Summer).

PPPA 6061. Banking and Financial Institutions Policy. 3 Credits.

This course examines the broad range of policy issues applicable to banking and financial institutions – including those related to monetary policy, financial stability, consumer protection, and community reinvestment. This area includes a number of questions that are at the forefront of the current national policy debate about the appropriate role of government and how best to regulate financial institutions and financial markets.

PPPA 6062. Community Development Policy and Management. 3 Credits.

This course examines the policy and practice of community development, including how private sector developers and lenders work with nonprofits, foundations, and the public sector to promote sustainable affordable housing, economic development, and other community-based projects that meet both financial as well as social impact criteria. This category of finance and development is intended to help people and communities just outside the margins of conventional, mainstream finance join the economic mainstream – and to help the economic mainstream enter emerging opportunity markets. The course explores different types of community development opportunities, including affordable housing, charter school, community facility, small business lending, and nonprofit real estate projects. The course also addresses emerging trends that are likely to affect community development policymakers and practitioners, including transportation oriented development, “green” development, use of technology, comprehensive community initiatives, and new ways of raising capital for community development projects.

PPPA 6063. Policy Issues in Corporate Social Responsibility (CSR) and Impact Investing. 3 Credits.

This course examines the role of the public and nonprofit sectors in supporting corporate and investor activities that are intended to have social and environmental, in addition to financial, benefits. These activities – often referred to as “corporate Social Responsibility” (CSR) and “impact investing” – have been described as having significant potential to create social benefits in addition to being in the financial best interests of the corporation or investor. At the same time, some critics of these activities have said that they are less about producing social benefits and more about marketing private sector activities that are primarily designed to produce corporate financial gains. The course explores what is meant by these two terms, what steps the public and nonprofit sectors have taken to support the wide range of activities that these terms encompass, and what have been the results of this work both in the United States and in other countries. The course also addresses emerging trends that are likely to affect the public and nonprofit role in CSR and impact investing in the future.

PPPA 6065. Federalism and Public Policy. 3 Credits.

PPPA 6066. Environmental Policy. 3 Credits.

Current issues in environmental policy: biodiversity, land use including wilderness protection, climate change, environmental justice, economic growth, and ecological sustainability.

PPPA 6067. Environment, Energy, Technology, and Society. 3 Credits.

The identification, examination, and evaluation of how environment, energy, and technology are interrelated and how these interactions influence policy formulation and implementation at the international, national, regional, industrial, and organizational levels. Same as SMPP 6207.

PPPA 6072. Legislative Management and Congress. 3 Credits.

Analysis of Congress as a management system; examination of its internal administration and its role in formulating policy through legislation. Staffing practices, leadership, rules and procedures, oversight functions, and coalition building. (Fall).

PPPA 6075. Law and the Public Administrator. 3 Credits.

Exploration and analysis of the functions of law in a democratic society. Emphasis is placed upon the procedural, historical, and jurisprudential dimensions of American law. This broad perspective seeks to convey understanding of the law as a legal and moral force guiding and constraining public decision making. (Spring and summer).

PPPA 6076. Federal Government Regulation of Society. 3 Credits.

Analysis of the federal regulatory process as it affects the public and private sectors. The regulatory process from legal, economic, administrative, and political perspectives. (Spring).

PPPA 6077. Case Studies in Public Policy. 1-3 Credits.

Critical analysis of topical issues in public policy, using a case-study approach. Specific issues covered will vary. (Fall, spring, and summer).

PPPA 6085. Special Topics in Public Policy. 3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit, provided the topic differs.

PPPA 6097. Practicum in Public Policy and Public Administration. 0 Credits.

PPPA 6098. Independent Research. 1-12 Credits.

Prerequisite: Permission of instructor and program director.

PPPA 8022. Econometrics-Policy Research II. 3 Credits.

Advanced topics in econometrics for policy research. This course is designed for doctoral students who wish to use econometric tools in their research. The course prerequisite is PPPA 6013 or an equivalent course in introductory econometrics; however, students should expect a greater degree of difficulty and a greater reliance on self-directed study in PPPA 8022 than PPPA 6013 (Fall and spring).

PPPA 8100. Seminar: Literature of Public Administration. 3 Credits.

Contemporary and historical literature in the institutional and intellectual development of public administration. (Spring).

PPPA 8101. Research Methods. 3 Credits.

Doctoral seminar on theory and practice in research methodology. Data sources and gathering, research models and designs. Critical evaluation of research studies. Emphasis on application of research methods to policy questions. (Spring).

PPPA 8105. Public Finance and Human Capital. 3 Credits.

The many facets of budgeting and finance and the research approaches used to study issues in this field. (Fall).

PPPA 8111. Seminar: Public-Private Sector Institutions and Relationships. 3 Credits.

An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311. Prerequisite: doctoral degree candidate status.

PPPA 8123. Seminar: The Policy Organization. 3 Credits.

Unique problems of complex organizations: public, private, and mixed. Emerging concepts and theories. Selected issues.

PPPA 8164. Seminar on Program Evaluation. 3 Credits.

Doctoral seminar on theory and practice in public and nonprofit program evaluation. The broad range of approaches undertaken, current controversies in the field, and the political and ethical context for evaluators.

PPPA 8174. Seminar: Public Organization Theory. 3 Credits.

Survey of contemporary normative and epistemological issues in public organization theory and practice. Analysis of the past and present influence of logical positivism, behaviorism, pragmatism, humanism, existentialism, phenomenology, and postmodernism. (Fall).

PPPA 8183. Current Topics & Research. 1 Credit.

Current scholarship discussed in a seminar setting. The conduct of research and presentation of research findings. May be repeated for credit.

PPPA 8190. Philosophical Foundations of Policy and Administrative Research. 3 Credits.

Philosophy of science as applied to research in public policy and public administration. Topics include the nature and current problems of epistemology, development and role of theories, and relationships among theory, methodology, and empirical data.

PPPA 8191. Dissertation Workshop. 3 Credits.

Limited to doctoral candidates who have taken and passed the qualifying examination and completed all required course work in a policy or public administration field. Critical analysis of current research. Formulation of a dissertation proposal and development of dissertation research strategies.

PPPA 8197. Doctoral Seminar:Special Topic. 1-3 Credits.**PPPA 8998. Advanced Reading and Research. 1-12 Credits.**

Limited to students preparing for the Doctor of Philosophy general examination.

PPPA 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

REGULATORY AFFAIRS (RAFF)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

RAFF 6201. Introduction to Global Regulatory Affairs. 3 Credits.

Foundations of regulatory affairs, including U.S. and international legislation and regulatory processes guidelines. Roles of leaders of regulatory affairs in developing products, navigating the regulatory review and approval process, and contributing to keeping products on the market. (Fall, spring, and summer).

RAFF 6202. Regulatory Drug Biologics. 3 Credits.

Development and evaluation of the regulatory affairs strategies that support drug and biologic development. Research science, study design, master file, risk/benefit analyses, product specifications and milestone identification, IND and NDA.

RAFF 6203. Regulatory Device Diagnostics. 3 Credits.

Development and evaluation of the regulatory affairs strategies that support device and diagnostics development. Research science, study design, master file, risk/benefit analyses, product specifications and milestone identification, IDE, 510K, PMA.

RAFF 6204. Clinical Research for Regulatory Affairs. 3 Credits.

The planning and conduct of clinical trials. Topics include protocol development, study design, post-marketing surveillance, and evaluation and assessment of regulatory submissions. Strategies for achieving clinical development goals. (Fall, spring, and summer).

RAFF 6205. Regulatory Affairs Compliance. 3 Credits.

Analysis and evaluation of regulatory affairs compliance strategies and guidelines. Pre and post marketing compliance of medical products, oversight, labeling, advertising and use.

RAFF 6275. Leadership inRegulatoryAffairs. 3 Credits.

Theories of leadership and change are integrated in the development of change proposals for the regulatory affairs field. The development of leadership solutions to problems in leading regulatory strategic change; integration of all field course work into implementation plans for health care system changes.

RELIGION (REL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

REL 1000. Dean's Seminar. 3 Credits.**REL 1001. Introduction to World Religions: West. 3 Credits.**

Examination of the religions of the ancient Mediterranean and the major religions of the West. Religious foundations of Western civilizations. The development of Judaism, Christianity, and Islam and their confrontations with secularization and political upheaval in the modern world.

REL 1002. Introduction to World Religions: East. 3 Credits.

Examination of the major religions of the East and comparison with religions in the West. Approaches to the cross-cultural study of religion. Hinduism, Buddhism, and the religions of Tibet, China, and Japan are studied with respect to their history and their encounter with modernity.

REL 1009. The Hebrew Scriptures. 3 Credits.

The literature, history, and religious thought represented by the Hebrew Scriptures (Old Testament). Continuities and contrasts between Israel and the ancient Near East are considered through study of the world view, oral and literary tradition, main religious ideas, and chief figures and movements of the biblical literature.

REL 1010. The New Testament. 3 Credits.

Literature and history of earliest Christianity in the setting of the religious movements of the Greco-Roman world and developments within Judaism. The meaning of the earliest Christian proclamation about the significance of the life, teaching, and death of Jesus of Nazareth becomes the basis for tracing the formation and expansion of the Christian movement. (Fall and spring).

REL 1010W. The New Testament. 3 Credits.

Literature and history of earliest Christianity in the setting of the religious movements of the Greco-Roman world and developments within Judaism. The meaning of the earliest Christian proclamation about the significance of the life, teaching, and death of Jesus of Nazareth becomes the basis for tracing the formation and expansion of the Christian movement.

REL 2165. Canonical Gospels. 3 Credits.

Study of the four canonical gospels (traditionally those of Matthew, Mark, Luke, and John) in terms of each presenting a distinct literary portrait of Jesus of Nazareth and each being the product of a religious community that shared at least some beliefs and practices with surrounding "pagan" and Jewish communities.

REL 2169. Lost Gospels. 3 Credits.

Examination of some of the gospels not included in the Christian canon. These include, among others, Q, the Gospel of Thomas, the Gospel of Mary, and the Gospel of Judas. These lost gospels provide a fresh perspective on the development and diversity of early Christianity.

REL 2201. Judaism. 3 Credits.

A survey of Jewish thought and practice from the biblical to the modern period; introduction to the Hebrew Bible, rabbinic Judaism, Jewish philosophy and mysticism, Judaism in the modern period; an examination of the central rituals in Judaism, including Sabbath, dietary laws, and major festivals.

REL 2211. Rabbinic Thought. 3 Credits.

The thought-world of rabbinic Judaism in its formative period, 100-500 CE, through a close reading of primary texts in translation selected from Mishnah, Talmud, and Midrash. Topics include Oral Torah, the mechanics of rabbinic law, conceptions of God, views on suffering. The influence of rabbinic Judaism on modern Jewish ethics and thought.

REL 2301. Christianity. 3 Credits.

Typical themes, patterns, and points of diversity within the Christian religion. Consideration of many perspectives of Christianity in terms of commonly shared as well as contested features, along with its complex relationship with broader culture. (Fall).

REL 2314. Contemporary Philosophy of Religion. 3 Credits.

The arguments of major figures in contemporary schools of thought within the philosophy of religion, including analytic, continental, deconstructionist, and process philosophy.

REL 2401. Islam. 3 Credits.

Islam as both a religion and a civilization. The basic Islamic beliefs and practices: the Qur'an, Hadith, and Islamic intellectual legacy; and the history of Islam from 632 to the present with particular attention to its encounter with the West.

REL 2506. Religion, Myth, and Magic. 3 Credits.

Theories of religion developed by anthropologists; survey of world religions with emphasis on non-Western societies; religious processes and change. (Same as ANTH 2506, ANTH 2506) (Fall).

REL 2562. Mythologies of India. 3 Credits.

The lore of Indian gods (Vedic, Puranic), heroes (epics), and holy men (Hindu, Buddhist, Jain, Tantric); ties with Indian art, caste, cult, cosmology, and spiritual ideals.

REL 2601. Buddhism. 3 Credits.

Consideration of the Buddhist tradition both thematically and historically, focusing on topics such as Buddhist doctrine, meditation, and rituals. The lived tradition in the pre-modern and modern periods.

REL 2811. Confucian Literature in East Asia. 3 Credits.

Introduction to Confucian literature in China and other parts of East Asia, from its beginnings to the present day. The various historical, philosophical, and religious dimensions of Confucian texts and practices; the role of Confucianism in the formation and development of Chinese and East Asian political systems, family systems, and gender relationships; recent intellectual debates on Confucianism in East Asia. Same as EALL 3811.

REL 2814. Religion and Philosophy of East Asia. 3 Credits.

Historical introduction to the major religious and philosophical traditions in China, Japan, and Korea, with focuses on ancestor worship, shamanistic cults, Confucianism, Buddhism, Daoism, and Shinto. The interactions of common East Asian religious and philosophical traditions how these traditions evolved over time, and the way each cultures assimilates foreign elements. How the very ideas of religion and philosophy are formulated and practiced differently in East Asia from those in the Western tradition. Same as EALL 3814.

REL 2921. The Religions Wage Peace. 3 Credits.

Resources in various world religions that contribute to peacemaking in interpersonal relations and in domestic and international politics. Consideration of ways in which religions contribute to intolerance and violence. Case-based approach to religions as related to peace and conflict resolution.

REL 2922. Ethics and World Religions. 3 Credits.

Modern concepts of ethics and their relation to major world religions, religion as stimulus and barrier to moral change, and modern moral issues ranging from bioethics to war.

REL 2981. Women in Western Religion. 3 Credits.

Historical, theological, and ethical investigation of the image and role of women in Judaism and Christianity; special consideration of the Biblical experience, the sexual qualifications for religious office, use of male and female images and languages, and contemporary issues. Same as WSTU 3981.

REL 3141. Second Temple/Hellenistic Judaism. 3 Credits.

History of Judaism from the time of Ezra through the destruction of Jerusalem in 70 CE—canonization of the Pentateuch, Hellenism, Maccabean revolt, growth of sectarian movements, Herod, ferment against Rome in context of Eastern and Western political currents. Use of primary sources, especially the Bible, Josephus, and noncanonical writings.

REL 3149. Biblical Issues. 3 Credits.

May be repeated for credit provided the topic differs.

REL 3149W. Biblical Issues. 3 Credits.

May be repeated for credit provided the topic differs.

REL 3151. Jesus. 3 Credits.

Comprehensive study of the life and teachings of Jesus with critical attention to sources. Quest for the historical Jesus.

REL 3151W. Jesus. 3 Credits.

Comprehensive study of the life and teachings of Jesus with critical attention to sources. Quest for the historical Jesus.

REL 3161. The Life and Thought of Paul. 3 Credits.

Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith.

REL 3161W. The Life and Thought of Paul. 3 Credits.

Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith.

REL 3214. Jewish Philosophy in the Medieval Period. 3 Credits.

An exploration of Jewish philosophical thinking from the close of the rabbinic period to the end of the Middle Ages through an analysis of four major philosophers—Saadia, Judah Halevi, Maimonides, and Gersonides. Topics include the nature of God, creation, divine providence, prophecy, and the rationale for the biblical commandments.

REL 3221. Issues in Jewish Ethics. 3 Credits.

Exploration of current debates about major ethical issues among Jewish thinkers in the Orthodox, Conservative, and Reform denominations; issues in bioethics, feminism, attitudes towards non-Jews, social action, the ethics of war.

REL 3291. Modern Jewish Thought. 3 Credits.

Jewish thought from 1800 to the present through an exploration of six preeminent Jewish theologians: Moses Mendelssohn, Hermann Cohen, Martin Buber, A.J. Heschel, J.B. Soloveitchik, and Mordecai Kaplan. The relationship between these thinkers and the major Jewish denominations: Orthodox, Conservative, Reform, and Reconstructionist.

REL 3292. Seminar: Issues in Jewish Thought. 3 Credits.

In-depth exploration of a selected thinker or issue in Jewish thought. Recommended for students with academic background in the study of religion or Judaic studies.

REL 3310. Apocalypse and Social Change. 3 Credits.

Investigation of typical ideas, patterns, and areas of social engagement associated with the genre of religious literature known as apocalypse. Why and how diverse groups within Jewish, Christian, and Muslim traditions crafted apocalypses that have shaped cultures across the globe from past to present. (Spring, even years).

REL 3321. Christian Ethics and Modern Society. 3 Credits.

Nature and principles of Christian life as developed by the Christian community; problems of personal conduct; application to various social institutions.

REL 3341. Christianity in the Ancient World. 3 Credits.

Rise and development of Christianity in relation to the culture, philosophy, mystery religions, and general religious life of the Greco-Roman world to A.D. 500.

REL 3342. Medieval Faith and Symbolism. 3 Credits.

Christian life and thought in the Middle Ages; mystics, saints, popes, and philosophers.

REL 3343. Religion in the Renaissance and Reformation. 3 Credits.

Transformation of the Western understanding of human identity and destiny from the end of the Middle Ages to the Age of Reason.

REL 3344. Christianity in the Modern World. 3 Credits.

Changes in Christian life and thought since 1700, as seen in theology, literature, political life, and religious institutions.

REL 3405. Shi'ite Islam. 3 Credits.

This course examines the emergence and development of Shi'ism as a branch of Islamic orthodoxy with particular emphasis on its doctrine, practices, theology, the law, politics, and the geographical and political context within which a distinct Shi'i identity developed.

REL 3414. Islamic Philosophy and Theology. 3 Credits.

The major schools of Islamic philosophy and theology, considered in both a morphological and historical manner. The relation between revelation and reason, determination and free will, and divine and human knowledge as well as the relation among science, philosophy, and religion. The development of various schools of thought, from the classical period to the present.

REL 3425. Islamic Political Thought. 3 Credits.

In contrast to many courses on this topic that focus on modern period, this course investigates Islamic political thought from its inception during the lifetime of the Prophet to its elaboration and expansion by philosophers, theologians and political theorists, and to its encounter with political thought coming from the Western world in modern period.

REL 3431. Sufism (Islamic Mysticism). 3 Credits.

The foundation of Sufism in the Quranic revelation, its subsequent development, and its significance within Islamic civilization. Doctrines and practices of Sufism; history of the Sufi orders; Sufi literature, particularly in Arabic and Persian. The influence of Sufism upon social and political life and its state and role in the contemporary world, both Islamic and non-Islamic.

REL 3475. Islamic Religion and Art. 3 Credits.

Investigation of major forms of Islamic art, such as calligraphy, architecture, and urban design; Quranic chanting, poetry, and music in relation to the principles of Islamic revelation. Same as AH 4119.

REL 3481. Women in Islam. 3 Credits.

The ways in which Islam has articulated gender identity and male-female relationships, and conversely, how women have constructed, interpreted, and articulated Islam and their places within it. Same as WSTU 3481.

REL 3482. Gender and Piety in Islam. 3 Credits.

Issues related to gender, sainthood, and piety in Islam. Reading of classical primary texts and historical, ethnographic, and philosophical works. Focus on mysticism and metaphysics in Sufi and Shi'i traditions. Final projects are creative or research oriented.

REL 3501. Hinduism. 3 Credits.

Study of continuity and change in Hinduism, with emphasis on historical development and the consolidating features of the religion. Attention to relations between classical and popular living forms.

REL 3566. Dharma in Hinduism and Buddhism. 3 Credits.

Development of working definitions of dharma as it is used in law, religion, ethics, and narrative in Buddhist and Brahmanical/Hindu texts of India's classical period.

REL 3611. South Asian Buddhism. 3 Credits.

The life of Buddha, the Buddhist Councils, doctrines of the schools of Hinayana Buddhism, philosophies of the schools of Indian Mahayana Buddhism, history of Buddhism in Sri Lanka, early history of Tibetan Buddhism, and the decline of Buddhism in India.

REL 3614. Buddhist Philosophy. 3 Credits.

Development of working definitions of dharma as it is used in law, religion, ethics, and narrative in Buddhist and Brahmanical/Hindu texts of India's classical period.

REL 3666. Book of Revelation. 3 Credits.

Examination of the Book of Revelation in its original historical context. This includes investigation of the origins of apocalyptic thought within Judaism and comparison of the Book of Revelation with other apocalypses such as Daniel, 1 Enoch, and 4 Ezra. (Fall, even years).

REL 3701. Religion in the United States. 3 Credits.

Growth of religious groups and institutions in relation to American culture, development of religious thought, and analysis of the contemporary religious scene.

REL 3711. Religion in Contemporary America. 3 Credits.

Trends and currents in American religion in the past fifty years. The nature and meaning of religious pluralism in the United States.

REL 3711W. Religion in Contemporary America. 3 Credits.

Trends and currents in American religion in the past fifty years. The nature and meaning of religious pluralism in the United States.

REL 3814W. Religion&Philosophy/East Asia. 3 Credits.

General introduction to the religions and philosophical tradition of China, Japan, and Korea. Same as EALL 3814.

REL 3831. Daoism in East Asia. 3 Credits.

Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Same as EALL 3831.

REL 3831W. Daoism in East Asia. 3 Credits.

Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Same as EALL 3831.

REL 3832. Myth, Ritual, and Popular Religion in China. 3 Credits.

Key aspects of popular religious myths, symbols, rituals, and practices in China, such as ancestor worship, spirit possession, fengshui theories, and pilgrimage.

REL 3841. Religion in Modern China. 3 Credits.

The changes, destructions, and reconstructions of Chinese religions from the late 19th century to the present day. The relationship between the (re)making of Chinese religions and the making of a modern Chinese nation-state. Same as CHIN 3841.

REL 3881. Women, Gender, and Religion in China. 3 Credits.

A historical introduction to the concepts of body, gender, and womanhood in Confucian, Daoist, Buddhist, and popular Chinese religious traditions. Women's roles in religious ritual and practices; the influence of Christianity and modernity. Same as WSTU 3881. (Fall).

REL 3901. Theories and Methods in the Study of Religion. 3 Credits.

Seminar taught jointly by the faculty of the Department of Religion. Analysis of different ways in which religious phenomena can be approached. Readings and discussion of some of the epoch-making books in the development of the study of religion.

REL 3915. Islam and Hinduism in South Asia. 3 Credits.

Investigation of the historical development and contemporary practice of Islam in South Asia (India, Nepal, Pakistan, Bangladesh, and Afghanistan). Particular attention to devotional traditions within Sufism and Bhakti Hinduism.

REL 3923. Violence and Peace in Judaism, Christianity, and Islam. 3 Credits.

Historical analysis of the violent and peaceful dimensions of the three Abrahamic faiths, with focus on the relationship of the scriptures of each of the three traditions to the later interpretations that supported both violent and peaceful readings of those texts.

REL 3931. Interfaith Dialogue in World Religions. 3 Credits.

Comparison of certain families of religions and the doctrinal debates in which they have engaged, including Hindu-Buddhist, inter-Hindu, inter-Buddhist, Buddhist-Confucian, Jewish-Christian, inter-Christian (Catholic-Protestant), Christian-Islamic, and inter-Islamic debates. (Fall, even years).

REL 3945. The Psychological Study of Spirituality. 3 Credits.

The complex interrelationship between psychology and spirituality: health and wellness; development of a spiritual life; psychological factors involved in spirituality; therapy and multicultural issues. Same as PSYC 3945.

REL 3951. Myth, Epic and Novel. 3 Credits.

Religious themes and images of the hero and their cultural significance in literature: e.g., Indo-European, Biblical, Babylonian narrative traditions; Greek epic and drama; Dante, Milton, Dostoevsky, Kafka, Hesse, Faulkner, Beckett.

REL 3989. The Goddess in India and Beyond. 3 Credits.

The goddess traditions of Hinduism, with some attention to goddess traditions in the ancient Near East and the Mediterranean. Classical Sanskrit, Tantric, and popular expressions of Hindu goddess worship. Comparative studies and issues of gender.

REL 3990. Selected Topics in Religion. 3 Credits.

Critical examination of religious phenomena rendered timely by current events or special resources. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

REL 3990W. Selected Topics in Religion. 3 Credits.

Critical examination of religious phenomena rendered timely by current events or special resources. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

REL 3999. Readings and Research. 2-3 Credits.

REL 4101. Senior Capstone Seminar. 3 Credits.

Required of and open to students majoring in religion.

REL 4191W. Senior Honors Thesis. 3 Credits.

REL 5701. Selected Topics. 0-4 Credits.

REL 5770. Islamic Civilization & West. 3 Credits.

REL 5771. Persian Sufi Literature. 3 Credits.

REL 5772. Mysticism-East and West. 3 Credits.

REL 6201. Special Topics in Religion. 3 Credits.

May be repeated for credit provided the topic differs.

REL 6401. Islamic Historiographies. 3 Credits.

Muslim historiographic traditions from the 7th to 15th centuries, including what they looked like and how they developed; the development of scholarly methods used to evaluate the source materials for these traditions in the formative and classical periods of Islam; key developments in postclassical, non-Arabic Muslim historiographic traditions in the Indian Subcontinent, Ottoman Turkey, and the Persian lands.

REL 6402. Qur'an and Hadith. 3 Credits.

The structure, major themes, and literary aspects of the twin sources of Islam. Commentaries written by Muslim scholars and their part in spreading the teachings of the sacred book of Islam. The general principle elements of Islamic theology, law, politics, ethics, philosophy, and art and architecture. The science of Hadith, its types, its relation to the Qur'an, and methods used for authentication of the sayings of the Prophet. The historical role of the Qur'an and Hadith both in classical as well as modern period with particular emphasis on its part in forming Muslim perception of society, history, and politics.

REL 6441. Islamic Law. 3 Credits.

Islamic positive law in the contemporary context. The family law of Islam (marriage, dowry, custody, guardianship and various forms of divorce); the law of inheritance and public trust (waqf) as two selected topics of Islamic private law. Examination of theories of jihad and siyar in the contemporary context of nation-state systems of international relationships. Islamic rituals ('ibadat) whose spirituality prevails the totality of the Islamic set of laws and regulations.

REL 6460. Topics in the Study of Islam. 3 Credits.

Study of sources and approaches to the investigation of Islam by both Western Islamicists and Muslim scholars, with discussion of the main controversial issues and differences in methods used by various schools of scholarship. Prerequisite: A course on Islam or permission of instructor.

REL 6461. Topics in Islamic Thought. 3 Credits.

Perennial major issues in Islamic theology, philosophy, and Sufism such as Divine Unity, prophetology, eschatology, religious knowledge, sacred law, and ethics. Prerequisite: A course on Islam or permission of instructor.

REL 6511. Currents of Modern Hinduism. 3 Credits.

Hinduism since the early seventeenth century. Colonialism, the impact of missionaries, orientalism, reform, relations between Brahmanical and popular Hinduism, Sanskrit and vernacular traditions, regionalism, communalism, nationalism, fundamentalism, politicized "syndicated" Hinduism, and secularism.

REL 6557. India's Great Epics. 3 Credits.

The Mahabharata and the Ramayana are treated in alternate offerings of the course. These founding epic texts of devotional (bhakti) Hinduism are taught in English translation. Vernacular and performative versions of the epics and Western adaptations.

REL 6771. American Religion to 1830. 3 Credits.

Religious thought and life during the Colonial and early National periods.

REL 6773. American Religion Since 1830. 3 Credits.

Religious thought and life from the Civil War to the present.

REL 6911. Myth, Ritual and Language. 3 Credits.

Method and theory in the interpretation of myth and narrative, ritual and sacrifice, and symbolism, with primary reference to the history of religions.

REL 6997. Readings and Research. 2-3 Credits.

Investigation of special problems.

REL 6998. Thesis Research. 3 Credits.**REL 6999. Thesis Research. 3 Credits.**

ROMANCE LITERATURES (ROM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ROM 3300. Topics in Romance Literatures and Cultures in Translation. 3 Credits.

Topics and themes providing a multicultural and comparative approach to the study of the cultural productions of French, Italian, and Spanish-speaking people. Readings and lectures in English. May be repeated for credit provided the topic varies. A laboratory fee may be required.

SCHOOL OF ENGINEERING & APPLIED SCIENCE (SEAS)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SEAS 0920. Continuing Research - Masters. 1 Credit.**SEAS 0930. Examination Preparation. 0 Credits.****SEAS 0940. Continuing Research - Doctoral. 1 Credit.****SEAS 1001. Engineering Orientation. 0-1 Credits.**

Introduction to careers in engineering and computer science, University resources, and computer skill development. Emphasizes teamwork skills by applying them to several design projects. (Fall).

SEAS 6100. Innovation and Technology. 3 Credits.

Introduction to design and management of technology; Law of Diffusion of Innovation; identification of fundamental engineering design limits; Sustained vs. disruptive engineering and technology, best practices from innovators and visionaries; engineering solution at the prototype state; technology impact on society; benefits of intellectual property protections; transformative technology and assessment from a holistic and global view point; application of the lean start-up approach to real-world challenges including sustainability.

SEAS 6200. Launching Technical Ventures. 1 Credit.

SCHOOL OF MEDIA AND PUBLIC AFFAIRS (SMPA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SMPA 1000. Dean's Seminar. 3 Credits.

SMPA 1050. Media in a Free Society. 3 Credits.

The role of mass communication in democratic political systems: informational requirements of democracy, sources of political information and the role of news media and other channels in creating and disseminating it; issues relating to propaganda and public information; and the interaction between information flows and democratic political culture. Not open to SMPA majors.

SMPA 1225. Forensics Practice (Debate). 1 Credit.**SMPA 2101. Journalism: Theory & Practice. 3 Credits.**

An overview of theories and key issues in journalism in the United States. News and democracy, the historical and social evolution of journalism, news values, journalism as occupation/profession, technologies and changes in journalistic practices. Open only to SMPA majors.

SMPA 2102. Introduction to Political Communication. 3 Credits.

Basic concepts and theories of political communication; development of a framework for analyzing political communication; applications in the United States, other countries, and the international system. Open only to SMPA majors. Prerequisite: PSC 1002.

SMPA 2110W. Introduction to News Writing and Reporting. 0-3 Credits.

Fundamentals of news reporting and writing, with emphasis on the print media. News judgment, information gathering skills, and crafting news and feature stories. Regular in-class and outside reporting and writing exercises. Directly admitted freshmen may enroll in their second semester; all other freshmen need departmental permission. Laboratory fee.

SMPA 2111W. Advanced News Reporting. 4 Credits.

Reporting, writing, and computer skills for covering beats and developing in-depth news stories. Techniques in researching, observing, and interviewing to frame stories of public interest; outside and in-class reporting and writing assignments. Restricted to Journalism and Mass Communication majors or permission of instructor required. Prerequisite: SMPA 2110. Laboratory fee.

SMPA 2112. Introduction to Digital Media Production. 0-3 Credits.

Foundational introduction to digital media production, including web design and video shooting/editing, with emphasis on use in journalism and political communication. Laboratory fee.

SMPA 2120. Public Opinion. 3 Credits.

Key aspects of the literature on public opinion, with emphasis on the role of media in opinion formation and change. Topics include the meaning of public opinion in a democratic society, a review of methods used to measure opinions, and media effects on opinion.

SMPA 2151. Research Methods. 3 Credits.

Processes of inquiry within mediated communication. The concepts of framing research questions, conducting literature reviews, developing a research design, and interpreting results of cultural and social science research within a societal framework. Prerequisites: STAT 1053 or STAT 1051 or STAT 1111 or STAT 1127. (Fall and spring).

SMPA 2173. Media Law. 3 Credits.

Freedom of the press. Changing laws of journalism and mass communication, including defamation, privacy, reporting access, obscenity and indecency, media ownership, intellectual property, advertising, and electronic communication.

SMPA 2177. Media History. 3 Credits.

American media from colonial times to the present, set against a backdrop of ongoing political, social, and economic developments. The development of press, radio, television, cable, satellite, and the Internet; government regulation and media relations; journalistic rights and responsibilities.

SMPA 3193. Selected Topics in Journalism and Mass Communication Skills. 3-4 Credits.

Topics announced in Schedule of Classes. May be repeated for credit if the topic differs.

SMPA 3194. Selected Topics in Political Communication. 3-4 Credits.

Topic announced in the Schedule of Classes. May be repeated if the topic differs, but may only count once toward the political communication major.

SMPA 3195. Selected Topics in Journalism and Mass Communication. 3-4 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic differs.

SMPA 3195W. Selected Topics in Journalism and Mass Communication. 3-4 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic differs.

SMPA 3196. Independent Study. 1-3 Credits.

Students pursue a program of directed reading, research, and writing under the direction of a faculty advisor. Limited to seniors.

SMPA 3197. Internship. 1-3 Credits.

Students spend at least five hours per week per credit with an approved news organization, agency, or office under the general guidance of a faculty advisor. Guidelines are available in the SMPA office and online. May be taken P/NP only. Restricted to SMPA majors and minors in the junior and senior year. May be repeated for up to 6 credits.

SMPA 3230. Reporting in the Digital Age. 3 Credits.

Understanding the emerging tools and developing the technological skills needed to analyze data for news. Students learn to find reliable information through social media and other online tools, use spreadsheets as a reporting tool, and download data for analysis, to create graphics, and to report and write stories based on the analysis. Prerequisite: SMPA 2110. Laboratory fee.

SMPA 3232. Online Journalism Workshop. 4 Credits.

Capstone production experience for SMPA majors. Provides advanced journalism and multimedia production skills needed to produce and report for a news website. Prerequisite: SMPA 2110, SMPA 2112. Laboratory fee.

SMPA 3233. Photojournalism. 3 Credits.

Elements of effective news and feature photos, including study and evaluation of slides taken by students. Picture selection, cropping, captions. Student costs include film and developing. Laboratory fee.

SMPA 3234. Publication Design. 3 Credits.

Design, editing, layout, and photo selection for newspapers and magazines. Selecting and editing stories; writing headlines and photo captions; sizing and cropping graphic materials; laying out pages. Ethics of editing. Student costs include film and developing.

SMPA 3235. Broadcast News Writing. 3 Credits.**SMPA 3235W. Broadcast News Writing. 3 Credits.**

Introduction to writing television news scripts based on actual events. Using workshop techniques, scripts are evaluated for content, structure, and use of words, pictures, and sound. Extensive writing and rewriting using streaming video from professional newscasts. Prerequisite: SMPA 2110.

SMPA 3236W. Broadcast News Reporting. 3 Credits.

Advanced techniques in television news reporting and editing. Students produce, shoot, and edit news packages by teaming up to report in the field. Prerequisite: SMPA 2110, SMPA 2112.

SMPA 3237W. Broadcast News Studio Production. 3 Credits.

Hands-on workshop designed to give simulated TV industry experience. Students work together to produce and direct a simulated broadcast news program. Recommended prerequisite: SMPA 3235 or SMPA 3236. Laboratory fee.

SMPA 3239. Television News Practicum. 4 Credits.

Capstone production experience for SMPA majors. Students report, produce, direct, and edit GW student news broadcast. Laboratory fee. Prerequisites: SMPA 3235 and SMPA 3236. (Spring).

SMPA 3240W. Washington Reporting. 3 Credits.

Examination of reporting and writing techniques employed in news coverage of the national government, with an emphasis on serving a regional readership or audience. Using Washington as a laboratory, students focus on contemporary issues and news makers in the legislative and executive branches of government. Prerequisite: SMPA 2110.

SMPA 3241W. Campaign Reporting. 3 Credits.

Development of news gathering and writing skills needed for the coverage of political campaigns. Using in-class exercises and outside assignments, students acquire reporting and writing proficiency to illuminate how campaigns work and how politics affects the lives of citizens. Prerequisite: SMPA 2110.

SMPA 3242. Investigative Reporting. 3 Credits.

Hands-on intensive training in reporting and writing in-depth enterprise news stories that expose hidden problems or wrongdoing. Prerequisite: SMPA 2110.

SMPA 3243W. Feature Writing. 3 Credits.

Learn to frame, research, and write a wide range of feature articles, including profiles, interviews and personal memoirs. Weekly writing assignments and a major final project are discussed and scrutinized in a workshop setting. Prerequisite: SMPA 2110.

SMPA 3244W. Narrative Journalism. 3 Credits.

The narrative or story-telling tradition in journalism. Students experiment with narrative techniques in a series of written exercises and a final project. Enrollment limited to 15 students with preference given to upper-class SMPA majors and graduate students. Prerequisite: SMPA 2110.

SMPA 3245W. Editorial & Persuasive Writing. 3 Credits.

Techniques of editorial and column writing; editorial page and public affairs programming; function of commentary in a free press. Prerequisite: SMPA 2110.

SMPA 3246. Specialized Reporting. 3 Credits.

Advanced reporting in specialized fields, such as business, science, medicine. Topics and instructors vary each semester. Prerequisite: SMPA 2110.

SMPA 3246W. Specialized Reporting. 3 Credits.

Advanced reporting in specialized fields, such as business, science, medicine. Topics and instructors vary each semester. Prerequisite: SMPA 2110.

SMPA 3247. Documentary Production. 4 Credits.

Advanced techniques in writing, researching, producing, and editing long-form documentaries. Prerequisite: SMPA 2112 and SMPA 3479 or permission of instructor.

SMPA 3350. Public Diplomacy. 3 Credits.

The theory and practice of public diplomacy: informing, influencing, and establishing dialogue with international publics and institutions. A conceptual and historical examination of public diplomacy, current practices, and contemporary issues, including international information dissemination, educational and cultural exchange, and international broadcasting.

SMPA 3351. Public Affairs and Government Information. 3 Credits.

Aspects of information and public affairs functions of government agencies at all levels. Role of the information specialist. Writing and editing for government publications.

SMPA 3352. Principles of Public Relations. 3 Credits.

Principles, problems, ethics, and law of public relations for government, private concerns, educational and other public institutions.

SMPA 3353. Strategic Political Communication. 3 Credits.

Origins of strategic approaches to political communication; techniques. Use of strategic communication by individuals, groups, organizations, and governments in both domestic politics and policymaking and in the international system. Prerequisite: SMPA 2102 or permission of instructor.

SMPA 3354. Political Campaign Communication. 3 Credits.

Communication aspects of political campaigns for candidates and ballot issues. Examination of techniques and channels of communication, role of communication in campaign strategy, ethics and implications of campaign decision making.

SMPA 3355. Campaign Advertising. 3 Credits.

Introduction to the theory and practice of campaign advertising. Emphasis on televised political campaign spots, but a range of campaign advertising media are included: radio, direct mail, and the Internet. Prerequisite: SMPA 2112.

SMPA 3356. Political Debate. 3 Credits.

Theory and practice of political debate. The campaign context, candidate strategies, debate issues, and debates and voter behavior. Participation in classroom debates.

SMPA 3357. Political Speech Writing. 3 Credits.

Theory and practice of public speaking in the context of mediated political communication. Students analyze, write, and give speeches.

SMPA 3357W. Political Speech Writing. 3 Credits.

Theory and practice of public speaking in the context of mediated political communication. Students analyze, write, and give speeches.

SMPA 3358. Strategic Practicum. 3 Credits.

Working in small groups, students research and develop full-scale plans for hypothetical, reality-based, strategic communication campaigns that test and apply theoretical advances in the field. Prerequisite: SMPA 3353.

SMPA 3428. Media, Politics & Government. 3 Credits.

The impact of mainstream media and online outlets on politics and the governing process. Topics include the role of social media, online advertising, comedy shows and the changing ways that voters receive information. Same as PSC 2228.

SMPA 3459. Language and Politics. 3 Credits.

Connections between language and the political world. Theory and practice of language in politics and the impact on the creation and consumption of politics.

SMPA 3460. Race, Media & Politics. 3 Credits.

Examination of the place of race in American society and politics, with attention to the role of media reporting in helping to shape understanding of race and racial matters, public opinion about race, and race and electoral politics.

SMPA 3461. Campaigns and Elections. 3 Credits.

The role of the news media in campaigns and elections. Offered in even-numbered years.

SMPA 3463. Media Bias. 3 Credits.

Exploration of empirical and theoretical understanding of media bias, its effects on power, and implications for democracy.

SMPA 3469. International Communication. 3 Credits.

A survey of theoretical themes in international communication and their practical applications: information production and circulation, global media industries, and cultures.

SMPA 3470. Comparative Media Systems. 3 Credits.

In-depth study of the developmental, regulatory, political, economic, and cultural dimensions of selected foreign communication systems.

SMPA 3471. Media in the Developing World. 3 Credits.

Contemporary views of media roles in developing nations. The role of the press and electronic media in economic, social, and national development, including media as agents of modernization, development journalism, and post-colonial responses to Western "cultural imperialism." Media and Islam; role of the Internet; and theories of media and globalization.

SMPA 3472. Media and Foreign Policy. 3 Credits.

The emerging role of news media in international affairs and diplomacy. Globalization of news media advances in digital information and communication technologies and consequences for the international system and diplomacy.

SMPA 3474. Electronic Media Policy. 3 Credits.

Legal, technical, political, economic, and social aspects of radio, television, and cable and related delivery systems. Structure and operation of the FCC and other agencies; the role of Congress and the courts. Spectrum allocation, behavioral regulation, the trend to deregulate political influence, and current policy issues.

SMPA 3475. Media Management. 3 Credits.

Decision making, strategic planning, and daily operations of all types of media organizations. Sales strategies, promotion, and research.

SMPA 3476. Changing Media Technology. 3 Credits.

Current and likely future trends in electronic media, with emphasis on radio, television, and cable, including developments in technology, programming, and public policy and their cultural implications.

SMPA 3479. Documentary. 3 Credits.

Origins, genres, and analysis of documentary film. Power, reach, and conceptual frameworks of documentary filmmaking.

SMPA 3480. Convergence/Future Journalism. 3 Credits.

Reasons behind the decline of traditional newspaper and broadcast journalism; the impact of the web and other digital tools on traditional journalism values.

SMPA 4198. Special Honors Research Seminar. 3 Credits.

Open only to special honors candidates in political communication in the senior year. Prerequisite: SMPA 4199 and departmental approval.

SMPA 4199. Senior Seminar. 3 Credits.

Capstone course limited to SMPA majors.

SMPA 6201. Strategic Communications Skills. 1.5 Credit.

Specialized skills courses, such as writing for public affairs, video editing and production, political uses of social media, web development and strategy, speechwriting. Topics announced in the Schedule of Classes. May be repeated for credit, but up to a maximum of 6 credits. (Spring).

SMPA 6202. Media Effects, Public Opinion, and Persuasion. 3 Credits.

Theories of media effects and persuasion. Institutional functions and individual effects of mediated communication. Impacts of different textual content and format on individual thinking and emotion; forces that shape content production. (Fall).

SMPA 6203. Information, Technology, and Political Communication. 3 Credits.

Issues pertaining to the political uses of the Internet, social media, and other new media; the effect that new information technologies have on political life and the ways in which politics shape technology development.

SMPA 6204. Strategic Political Communication. 3 Credits.

Theory, techniques, and implications of strategic communication as employed by individuals, groups, organizations, and governments to advance their interests; applications to non-electoral politics and policymaking; use of political, psychological, sociological, and other processes; methodological considerations; domestic and international applications.

SMPA 6205. Media, Development, and Globalization. 3 Credits.

Theories of media and globalization. The changing role of communication media, including the Internet and other newer technologies as well as traditional books, film, newspapers, telephone, and satellite in establishing closer relationships and interdependencies among people, their cultures, and their organizations in various countries.

SMPA 6206. Advocacy Communication and Political Networks. 3 Credits.

Cross-disciplinary approaches to global changes in the nature of governance and collective action. The role of new technology, social movements, NGOs and transnational advocacy networks. Information campaigns and advocacy communication.

SMPA 6207. Political Persuasion and Public Opinion. 3 Credits.

Major theories and perspectives in public opinion and persuasion research. Information processing, psychological models applied to politics and media research (cognition, attitudes, resistance, heuristics), public opinion dynamics.

SMPA 6208. Politics and Public Relations Fundamentals. 3 Credits.

Basic knowledge of the skills to design, implement, and evaluate public relations activities. Case studies of public relations applied to politics. Techniques and tactics used by public relations professionals. (Spring).

SMPA 6210. Media & Foreign Policy. 3 Credits.

The effects of U.S. media on U.S. and foreign governments, and of foreign media on the U.S.; effects of other countries' media on each other; the impact of the Internet, inexpensive global phoning, CNN, al Jazeera, and other newer technologies and networks on the stuff of international relations: diplomacy, military operations, trade negotiations.

SMPA 6220. Strategic Practicum. 3 Credits.

Design of strategy for an information and influence campaign. Research on issues and actors, identification of critical decision-making points and key constituencies, development of communication strategies more likely to achieve stated objectives of a campaign. Prerequisite: SMPA 6204. For students doing a strategic communication capstone project, this course replaces SMPA 6297.

SMPA 6221. Communication and Technology Practicum. 3 Credits.

Practicum in using digital and social media tools to advocate and communicate. A project-based course in which students develop and implement an online campaign using web, social media, and blogs. Students design campaign and message elements, create content, and manage website.

SMPA 6230. Principles and Methods of Documentary Filmmaking. 6 Credits.

Analytical and practical exploration of the elements of documentary filmmaking. The genres of nonfiction filmmaking; fundamentals of film conceptualization, documentary screenwriting, story structure, and production theory; and basic practical elements of production. Admission by permission of instructor.

SMPA 6231. Documentary Filmmaking Practicum. 3 Credits.

Intensive practical experience in documentary film production. Students produce a 10-15-minute documentary film on a selected topic. Emphasis on major markers in film production: treatment and script writing, location shooting, Final Cut Pro editing, graphics, music, and final sound mix. Prerequisite: SMPA 6230 and permission of instructor.

SMPA 6241. Research Design. 3 Credits.

Design, applications, and limitations of quantitative research as applied to the field of media and strategic communication. Framing of research questions, identification of variables and formulation of hypotheses, measurement, sampling, data gathering techniques, and preparation of research reports. Brief exposure to qualitative research. (Fall).

SMPA 6242. Analytics and Data Analysis for Strategic Communication. 3 Credits.

Familiarity with major data analytic and analysis techniques used by strategic communication practitioners. Topics covered include basic statistical analysis, multivariate regression, experiments, focus groups, and survey research. Prerequisites: an undergraduate statistics course. (Spring).

SMPA 6250. Topics in Media Processes and Institutions. 3 Credits.

Topics address such issues as the history of media content, institutions, and process; impact of changing communication technology on culture; history and development of mass-produced culture; and professional ideology and practice of journalism. May be repeated for credit provided the topic differs.

SMPA 6270. Topics. 3 Credits.

Topics explore such areas as social theories of public opinion and mass media's response; and the role of mass media in constructing social perceptions of the scientific process and its relationship to cultural and material life.

SMPA 6272. Media Bias, Power, and Democracy. 3 Credits.

Consideration of the available scholarly evidence in order to develop a more sophisticated empirical and theoretical understanding of what constitutes media bias. How do we recognize and measure bias? Are there patterns in decisions about news coverage that indicate bias? Which political parties and economic interests benefit from patterns of news coverage?.

SMPA 6274. Media and War. 3 Credits.

Historic and contemporary examination of the media's role in wartime. Topics include covering war, the role of the media in generating support for foreign intervention, propaganda, effects of war coverage on public opinion, media and genocide, and public diplomacy. Ethical, philosophical and political implications of the media's role.

SMPA 6275. Public Diplomacy. 3 Credits.

SMPA 6292. Co-Curricular Activities in Responsible Management. 0 Credits.

SMPA 6296. Directed Readings and Research. 3 Credits.

Independent research with SMPA faculty member. Must be approved in advance by supervising professor and director of graduate studies.

SMPA 6297. Capstone Project. 3 Credits.

SMPA 6298. Capstone Project. 3 Credits.

SMPA 6998. Thesis Research. 3 Credits.

SMPA 6999. Thesis Research. 3 Credits.

SCHOOL OF MEDICINE & HLTH SCI (SMHS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SMHS 0920. Continuing Research - Masters. 1 Credit.

SECURITY & SAFETY LEADERSHIP (PSSL)

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSSL 6240. Political Violence and Terrorism. 3 Credits.

PSSL 6241. Globalization of Threats and International Security. 3 Credits.

PSSL 6242. Security and Civil Liberties. 3 Credits.

PSSL 6243. Intelligence and Strategic Analysis. 3 Credits.

PSSL 6244. Information Systems Protection. 3 Credits.

PSSL 6245. Cyber Security Law and Policy. 3 Credits.

PSSL 6246. Cyber Intelligence and Strategic Analysis. 3 Credits.

PSSL 6247. Cyber Defense Strategies. 3 Credits.

PSSL 6248. Introduction to Cyber Conflict. 3 Credits.

PSSL 6250. Strategic Planning and Budgeting. 3 Credits.

PSSL 6251. Inter-Agency Cooperation. 3 Credits.

PSSL 6252. Emergency Management and Crisis Communication. 3 Credits.

PSSL 6253. Managing the Politics of Leadership. 3 Credits.

PSSL 6254. Strategic Change Leadership. 3 Credits.

PSSL 6255. Info. Mgt. Just. & Pub. Safety. 3 Credits.

PSSL 6256. Applied Tech in Data Analytics. 3 Credits.

PSSL 6257. Enterprise Arch. & Standards. 3 Credits.

PSSL 6258. Info Sharing & Safeguarding. 3 Credits.

PSSL 6259. Strat. IT Invsmt. & Perf. Mgmt. 3 Credits.

PSSL 6260. Methods of Analysis in Security. 3 Credits.

PSSL 6270. Capstone Project. 3 Credits.

Development of a research project integrating theoretical and analytic perspectives applied to improving organizational effectiveness in public safety agencies.

SLAVIC LANGUAGES AND LITERATURE (SLAV)

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- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SLAV 1000. Dean's Seminar. 3 Credits.

SLAV 1001. First-Year Russian I. 4 Credits.

Fundamentals of speaking, understanding, reading, and writing Russian. Heritage speakers require permission to register. Laboratory fee.

SLAV 1002. First-Year Russian II. 4 Credits.

Continuation of SLAV 1001. Fundamentals of speaking, understanding, reading, and writing Russian. Prerequisite: SLAV 1001. Heritage speakers require permission to register. Laboratory fee.

SLAV 1003. Second-Year Russian I. 4 Credits.

Fundamentals of speaking, understanding, reading, and writing Russian. Prerequisite: SLAV 1002. Laboratory fee.

SLAV 1004. Second-Year Russian II. 4 Credits.

Continuation of SLAV 1003. Fundamentals of speaking, understanding, reading, and writing Russian. Prerequisite: SLAV 1003 or placement test. Laboratory fee.

SLAV 1012. Intensive Basic Russian I. 8 Credits.

Intensive course in fundamentals of speaking, understanding, reading, and writing Russian (equivalent to SLAV 1001- SLAV 1002). Recommended for majors. Heritage speakers require permission to register. Laboratory fee.

SLAV 1013. Russian for Heritage Speakers I. 3 Credits.

Prepares heritage speakers of Russian for advanced study in Russian at the third-year level and beyond, including content courses in literature and area studies. Prerequisite: a placement test.

SLAV 1014. Russian for Heritage Speakers II. 3 Credits.

Continuation of SLAV 1013. Prepares heritage speakers of Russian for advanced study in Russian at the third-year level and beyond, including content courses in literature and area studies. Prerequisite: a placement test.

SLAV 1034. Intensive Basic Russian II. 8 Credits.

Continuation of SLAV 1012. Intensive course in fundamentals of speaking, understanding, reading, and writing Russian (equivalent to SLAV 1003- SLAV 1004). Recommended for majors. Prerequisite: SLAV 1002 or SLAV 1012. Heritage speakers require permission to register. Laboratory fee.

SLAV 1391. Introduction to Russian Literature I. 3 Credits.

Russian literature and society, 1800-1860s, concentrating on the Golden Age of Russian literature; poems and stories by Pushkin, Lermontov, Gogol, and Turgenev.

SLAV 1392. Introduction to Russian Literature II. 3 Credits.

Continuation of SLAV 1391. Russian literature and society on their way to modernity; great works of prose and drama by Dostoevsky, Tolstoy, Chekhov, and Bunin.

SLAV 2005. Intermediate Russian I. 5 Credits.

Practice in speaking, listening, reading, and writing at the intermediate level. Prerequisite: SLAV 1004 or SLAV 1034 or permission of instructor.

SLAV 2006. Intermediate Russian II. 5 Credits.

Continuation of SLAV 2005. Practice in speaking, listening, reading, and writing at the intermediate level. Prerequisite: SLAV 1004 or SLAV 1034 or permission of instructor.

SLAV 2007. Russia Today: Topics in Advanced Russian I. 3 Credits.

Practice in speaking, listening, reading, and writing at the advanced level. Prerequisite: SLAV 2006 or permission of instructor.

SLAV 2008. Russia Today: Topics in Advanced Russian II. 3 Credits.

Continuation of SLAV 2007. Practice in speaking, listening, reading, and writing at the advanced level. Prerequisite: SLAV 2006 or permission of instructor.

SLAV 2015. Readings in the Russian Press I. 3 Credits.

Reading and analysis of current Russian periodicals. For departmental majors and graduate students with a reading-language proficiency requirement.

SLAV 2016. Readings in the Russian Press II. 3 Credits.

Continuation of SLAV 2015. Reading and analysis of current Russian periodicals. For departmental majors and graduate students with a reading-language proficiency requirement.

SLAV 2361. Russian Culture. 3 Credits.

Survey of Russian cultural heritage from its ancient origins through the early 19th century. Architecture from the medieval period through the end of the Empire style. Iconography, the influence of the Church, and effects of the West on Russian culture.

SLAV 2362. Russian Culture. 3 Credits.

Survey of Russian culture from the 19th century through the present, including intellectual movements; realism in music, art, and theatre; ballet; avant-garde painting; and effects of Soviet policies and of Perestroika.

SLAV 2365. 20th-Century Russian Literature to World War II. 3 Credits.

Russian literature and culture of the first half of the 20th century: the impact of the revolution on writers and literature; avant-garde, socialist realism, and emigre literature (Nabokov)—in English.

SLAV 2366. Russian Literature from World War II to the Present. 3 Credits.

Literature in wartime and in postwar years from Solzhenitsyn to the latest trends: the "thaws," village and urban prose, post-Soviet literature, Russian postmodernism—in English.

SLAV 2471. 19th-Century Russian Prose. 3 Credits.

Reading and discussion of selected prose texts of the 19th century from Pushkin to Chekhov—in Russian. Prerequisite: SLAV 2006 ; SLAV 1391– SLAV 1392.

SLAV 2472. 19th-Century Russian Poetry. 3 Credits.

Reading and discussion of selected poetry of the 19th century (Pushkin, Lermontov, Nekrasov, and others)—in Russian. (Spring, odd years).

SLAV 2473. 20th-Century Russian Prose. 3 Credits.

Reading and discussion of selected prose of the 20th century from Bunin to Solzhenitsyn—in Russian. (Fall, odd years).

SLAV 2474. 20th-Century Russian Poetry. 3 Credits.

Reading and discussion of selected poetry of the 20th century from Blok to Brodsky—in Russian. Prerequisite: SLAV 2006 ; SLAV 2365, SLAV 2366.

SLAV 2785. Introduction to Russian Cinema I. 3 Credits.

(In English; all films subtitled.) From Russian silents to the introduction of sound and color (1896–1946). The great revolutionary directors—Eisenstein, Pudovkin, Dovzhenko.

SLAV 2786. Introduction to Russian Cinema II. 3 Credits.

Continuation of SLAV 2785. (In English; all films subtitled.) From post-war to post-perestroika cinema (since 1946): war films, adventure, films about youth.

SLAV 4595. Special Topics. 3 Credits.

May be repeated for credit provided the topic differs.

SLAV 4595W. Special Topics. 3 Credits.**SLAV 4597. Senior Honors Thesis I. 3 Credits.**

Senior honors thesis on a topic related to Russian language, literature, or culture. Required of and open only to honors candidates in the department.

SLAV 4598. Senior Honors Thesis II. 3 Credits.

Continuation of SLAV 4597. Senior honors thesis on a topic related to Russian language, literature, or culture. Required of and open only to honors candidates in the department.

SOCIOLOGY (SOC)

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SOC 1000. Dean's Seminar. 3 Credits.**SOC 1001. Introduction to Sociology. 3 Credits.**

A broad overview of the "sociological imagination" as a way of understanding social issues and personal experience; sociology's place among the social sciences; basic elements of sociological perspectives. (Fall and spring).

SOC 1002. The Sociological Imagination. 3 Credits.

Using the sociological—rather than the psychological, economic, or religious—imagination, students gain experience making connections between those things that seem intimate and personal and those that give order to the social world. An introduction to sociology that engages students in field-related topics such as race, gender, inequality, and education. (Fall and spring).

SOC 1003. Introduction to Criminal Justice. 3 Credits.

An introduction to the study of criminal justice. The historical development of criminal justice and its evolution into modern legal systems. The impact of different forms of criminal justice on society and the individual. (Fall and spring).

SOC 2101. Social Research Methods. 3 Credits.

Introduction to basic research methods in sociology. Topics include research design, sampling, measurement, and analysis of survey data via computer application. Prerequisites: Either SOC 1001 or SOC 1002. (Fall and spring).

SOC 2102. Techniques of Data Analysis. 3 Credits.

Continuation of Soc 2101. Lecture (3 hours), laboratory (1 hour). Examination of a range of topics in the statistical analysis of sociological data, with a strong emphasis on computer applications. Prerequisites: Either SOC 1001 or SOC 1002 and SOC 2101. (Fall and spring).

SOC 2103. Classical Sociological Theory. 3 Credits.

Analysis and critique of the development of Western European and North American social thought in the period of modernity. Consideration of the development of classical theoretical statements and the emergence of topics of sociological inquiry globally. Prerequisite: Either SOC 1001 or SOC 1002. (Fall).

SOC 2103W. Classical Sociological Theory. 3 Credits.

Analysis and critique of the development of Western European and North American social thought in the period of modernity. Consideration of the development of classical theoretical statements and the emergence of topics of sociological inquiry globally. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2104. Contemporary Sociological Theory. 3 Credits.

A systematic evaluation of the work of selected social theorists of the post-World War II era. Emphasis on application of theoretical concepts to matters of present-day concern. Prerequisites: Either SOC 1001 or SOC 1002. (Fall and spring).

SOC 2104W. Contemporary Sociological Theory. 3 Credits.

A systematic evaluation of the work of selected social theorists of the post-World War II era. Emphasis on application of theoretical concepts to matters of present-day concern. Prerequisites: Either SOC 1001 or SOC 1002. (Fall and spring).

SOC 2105. Social Problems in American Society. 3 Credits.

Introduction to critical social problems (e.g., unemployment, poverty, crime, discrimination) in the United States and how they are, and have historically been, researched and understood by the academic and non-academic worlds. Concepts, theories, and methods of sociological research; examination of the field of social problems generally, emphasizing contemporary social problems. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2111. Field Research. 3 Credits.

Examination of the logic of qualitative inquiry and techniques of qualitative data collection and analysis. Various research methods are covered, with an emphasis on intensive interviewing, participant observation in field settings, and focus groups. Prerequisites: Either SOC 1001 or SOC 1002. (Fall and spring).

SOC 2112. Evaluation Research. 3 Credits.

Introduction to the evaluation of public programs designed to address the impact of social problems on individuals, households, and larger collective groups. Application of social science theory and research methods to the assessment of impact benefits and costs of such programs. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2135. Youth and Delinquency. 3 Credits.

Analysis of historical, economic, and social conditions affecting both difficulties in socializing youth and the evolution of the state's formal systems of control. Prerequisites: Either SOC 1001 or SOC 1002. (Fall and spring).

SOC 2136. Criminology. 3 Credits.

Nature and distribution of crime as related to the development and operation of criminal law and various social and legal institutions. Analysis of the historical, social, legal, and cultural conditions affecting the nature of crime, criminality, and the development of state responses made to it. Prerequisites: EITHER: (SOC 1001 or SOC 1002) AND SOC 1003. (Fall, spring, and summer).

SOC 2145. Criminal Law. 3 Credits.

Introduction to the sources and fundamental principles of criminal law and procedure using major sociological perspectives as interpretive tools. Prerequisites: EITHER: SOC 1001 or SOC 1002 AND: SOC 1003. (Fall and spring).

SOC 2150. Sociology of Sports. 3 Credits.

Sport as a social institution; the role, consequences, and functions of sport in U.S. society. Relationships between sport and the institutions that impact our lives: education, mass media, economics, politics, etc. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2151. Jackie Robinson: Race, Sports, and the American Dream. 3 Credits.

How Jackie Robinson's struggles and accomplishments can help in understanding current issues in race, sport, and U.S. society. The background leading to, and the impact emanating from, Robinson's entry into major league baseball. Prerequisites: Either SOC 1001 or SOC 1002. (Fall).

SOC 2161. Sociology of Complex Organizations. 3 Credits.

Review of sociological approaches to the study of complex organizations. Selected and comparative emphasis on bureaucratic organization in both government and private sectors. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2162. Sociology of the Family. 3 Credits.

An examination of the stages of family life: birth, childhood, premarital relationships, marriage and sex roles in marriage, retirement and old age. Special emphasis on development and maintenance of interpersonal relations. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2163. Sociology of Education. 3 Credits.

Analysis of educational systems from historical-comparative, institutional, and micro-sociological perspectives. Emphasis on educational systems in relation to the religious, cultural, economic, and political forces shaping their character; the role of formal education in modern society. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2165. Sociology of Religion. 3 Credits.

Analysis of the relationships between religion and society. Topics include the contribution of religion to social integration, social change, and social inequality; the nature of religious experience; religious symbolism; the basis of religious communities. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2167. Sociology of Law. 3 Credits.

Law as a social phenomenon and agency of social control. Special emphasis is placed on study of judicial process and the sources of and challenges to the legitimacy of law. Prerequisites: EITHER: SOC 1001 or SOC 1002 AND: SOC 1003. (Fall and spring).

SOC 2168. Economic Sociology. 3 Credits.

Sociological approach to the study of micro- and macroeconomic behavior. Historical and comparative analyses informed by the literature of sociology and other social sciences. Critical review of economic policy in developing, post-communist and advanced market societies. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2169. Urban Sociology. 3 Credits.

Analysis of the city from a sociological perspective. Topics include a focus on the social change and inequality associated with urban growth, neighborhood change, and suburbanization; residential segregation; the issue of whether community exists in cities; urban poverty and homelessness. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2170. Class and Inequality in American Society. 3 Credits.

Analysis of distribution of resources and opportunities for participation, education, and social mobility. International comparisons; analysis of public policies that affect these distributions. Prerequisites: Either SOC 1001 or SOC 1002. (Fall and spring).

SOC 2173. Social Movements. 3 Credits.

General survey of the various forms of collective behavior (fads, panics, riots, social movements, etc.), and a more detailed study of the genesis, development, and decay of social movements and social revolutions. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2175. Sociology of Sex and Gender. 3 Credits.

The consideration of gender and sex as organizing principles of social relations. Analysis of the dynamics of inequality in such areas as families, the workforce, culture and mass media, politics, sexual relationships, law medicine, religion, and education. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2177. Sociology of the Sex Industry. 3 Credits.

Sociological examination of sex workers and businesses in the United States and other nations. Analysis of major theoretical perspectives and research on the social organization of sex work, the experiences of participants, issues of gender and sexuality, and alternative policy frameworks regarding prostitution, pornography, and commercial stripping. Prerequisite: Either SOC 1001 or SOC 1002 and either SOC 2175 or SOC 2178.

SOC 2178. Deviance and Control. 3 Credits.

Examination of deviant behavior and its control. Topics include theoretical perspectives, changing societal conceptions of deviance, deviant behavior and identity, and the dynamics of control agencies. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2179. Race and Minority Relations. 3 Credits.

Analysis of relationships between dominant and minority groups in society; nature and range of problems; analysis of the phenomenon of prejudice. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2181. Special Topics in Sociology. 3 Credits.

Analysis and examination of various processes in society of general importance to the field of sociology, e.g., social conflict, socialization, social change. Topic changes each semester; may be repeated once for credit. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2181W. Special Topics. 3 Credits.

Analysis and examination of various processes in society of general importance to the field of sociology, e.g., social conflict, socialization, social change. Topic changes each semester; may be repeated once for credit. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2184. Violence and the Family. 3 Credits.

Comparative approach to power and violence in family systems. Analysis of devaluation of family relations. Critical survey of explanations of violence and responses made to it. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2189. Special Topic-Criminal Justice. 3 Credits.

Analysis and examination of various processes and problems of general importance to the field of criminal justice. Topic changes each semester; may be repeated once for credit. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 2189W. Special Topic-Criminal Justice. 3 Credits.

Analysis and examination of various processes and problems of general importance to the field of criminal justice. Topic changes each semester; may be repeated once for credit. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 3195. Research. 1-3 Credits.

Independent study and special projects. Open only to selected undergraduates with promising academic records. Prerequisite: Students must submit a written proposal of their plan of study for the approval of the member of the department who will direct the research. May be repeated for credit to a maximum of 6 credits. Prerequisite: Either SOC 1001 or SOC 1002.

SOC 4192. Advanced Seminar in Criminal Justice. 6 Credits.

Restricted to seniors majoring in criminal justice. Internship in a criminal justice agency; field placement in consultation with a faculty member is required before registration. Weekly seminar meetings, presentations, journal, and a paper are required. Prerequisite: Either SOC 1001 or SOC 1002 and either SOC 2136 or SOC 2145. (Fall and spring).

SOC 4195. Senior Research Seminar. 3 Credits.

For sociology majors. Directed research and writing on sociological topics. Topic focus of the seminar will vary by semester. Prerequisites: Completion of at least one methods course (SOC 2101 or SOC 2102) and one theory course (SOC 2103 or SOC 2104). (Fall and spring).

SOC 6230. Sociological Research Methods. 3 Credits.

Survey of the procedures, methods, and problems of contemporary sociological data collection, with an emphasis on survey methods. Major topics include research design, instrument construction, survey sampling, and measurement. (Fall).

SOC 6231. Data Analysis. 3 Credits.

Intensive study of quantitative data analysis techniques, with strong emphasis on computer applications. Prerequisite: SOC 6230.

SOC 6232. Qualitative Methodology: Doing Field Research. 3 Credits.

Practical application of data collection methods in natural settings; observation, participant observation, and field experience. Emphasis on implementing research projects by using these methods for purposes of developing empirically grounded theory. (Fall).

SOC 6238. Development of Sociological Theory. 3 Credits.

Development of sociology from the early 1800s to the 1920s. Intensive analysis of the classical theoretical statements. (Fall).

SOC 6239. Contemporary Sociological Theory. 3 Credits.

Intensive examination and evaluation of contemporary schools of sociological theory in Europe and America. Advanced analysis of theoretical perspectives. (Spring).

SOC 6240. Field Research in Organizational Settings. 3 Credits.

Applications of field research techniques in formal organizational settings. Examination of the logic of qualitative inquiry and techniques of qualitative data collection. Intensive interviewing and participant observation in field settings are emphasized. (Fall).

SOC 6244. Sociology of Families and Kinship. 3 Credits.

A systematic introduction to recent theoretical perspectives and empirical research on family patterns. The course combines a focus on how and why societal family patterns vary and change over time with an examination of how individuals vary in their experience of life course transitions, such as marriage, childbirth, employment, divorce, and retirement. (Fall).

SOC 6245. Race Relations. 3 Credits.

Systematic analysis of race relations and inequality, primarily in the United States. Topics include current status and recent trends in inequality, the institutional and organizational patterning of discrimination, the structure of racial attitudes, theoretical perspectives on race relations, and selected policy issues. (Spring).

SOC 6246. Comparative Race and Ethnicity. 3 Credits.

Examination of race and ethnic relations in comparative, international perspective. Selected societies are analyzed in terms of patterns of racial and ethnic inequality, intergroup relations, institutional foundations of discrimination, social control systems, and sources of social change. (Spring).

SOC 6248. Race and Urban Redevelopment. 3 Credits.

An examination of sociological forces shaping the development of metropolitan areas, racial inequality, and the intersections of urban development and race relations. Major theories of urban and metropolitan development and causes of racial inequality; major past and current public policies.

SOC 6250. Urban Sociology. 3 Credits.

Systematic analysis of urbanization and life within urban areas, primarily in the United States. Topics include theoretical perspectives on urban growth and neighborhood change, housing, the community question, neighborhood effects on individuals within the metropolis, and selected policy issues.

SOC 6252. Selected Topics. 3 Credits.

Examination of selected topics of general importance to sociology. May be repeated once for credit. (Fall and spring).

SOC 6254. Evaluation Research. 3 Credits.

Systematic survey of the conceptualization, design, and practice of evaluation research. Prerequisite: SOC 6230.

SOC 6255. Practicum in Applied Sociology. 3,6 Credits.

Supervised sociological research through an internship in a local organization (e.g., a government agency, a non-governmental organization, or a research firm). The internship must be for at least 10 hours a week. Weekly seminar; final paper. Prerequisite: completion of all methodology requirements for the M.A. degree.

SOC 6258. Deviance and Control. 3 Credits.

Examination of major theories and research in the field of deviance and social control, with special emphasis on recent empirical advances and comparative perspectives. (Fall).

SOC 6259. Criminology. 3 Credits.

The status of various criminology theories. Theories of crime causation and crime control; cross-cultural research on crime. (Spring).

SOC 6260. Special Topics in Criminal Justice. 3 Credits.

Examination of selected topics in criminal justice. May be repeated once for credit if the topic differs. (Fall and spring).

SOC 6261. Sociology of Law. 3 Credits.

The development and use of law in complex societies, including the different roles of civil and criminal law. The role of the sociology of law within the discipline of sociology. (Spring).

SOC 6262. Corrections. 3 Credits.

Analysis of adult and juvenile correctional systems, including probation, parole, jails, and prisons. Topics include theoretical perspectives, the impact of corrections on crime rates, and evaluations of sentencing and other reforms. (Spring).

SOC 6263. Race and Crime. 3 Credits.

Examination of race, crime, and punishment in American society. Analysis of competing theoretical explanations for interracial differences in crime rates, and racial patterns in the apprehension, adjudication, and punishment of offenders. (Fall).

SOC 6264. Organized Crime. 3 Credits.

The role of organized crime in the political economy of different countries, with emphasis on the development of organized crime networks in the United States. (Spring).

SOC 6265. Women, Welfare & Poverty. 3 Credits.

Examination of how the causes and consequences of poverty differ for women and men; how race, class, and gender shape policy responses to poverty. The history of family assistance policy in the United States and the impact of various welfare reform efforts. Same as WSTU 6265.

SOC 6266. Gender & Criminal Justice. 3 Credits.

How understandings, practices, and theories of gender shape the workings of criminal justice systems, including issues of criminality and responses to crime, victimization and violence, and definitions of illegal behaviors. Same as WSTU 6266.

SOC 6268. Race, Gender and Class. 3 Credits.

How social structures are constructed through race, gender, and class and how they shape experience. The intersections of race, gender, and class in education, science, politics, labor markets, and social welfare policies. Same as WSTU 6268.

SOC 6271. Gender and Society. 3 Credits.

Examination of current empirical and theoretical work on gender as an organizing principle of social relations. Consideration of the relationship of gender to sex and sexuality. Same as WSTU 6271.

SOC 6272. Theoretical Perspective-Gender. 3 Credits.**SOC 6273. The Sex Industry. 3 Credits.**

Sociological examination of prostitution, pornography, and other forms of sex work in the United States and internationally. Topics include theoretical perspectives, structure of the sex industry, workers' experiences, gender issues, political conflicts, and policy implications. (Spring).

SOC 6286. The Law of Race and Slavery. 3 Credits.

The role of legal norms and processes in developing patterns of slavery and race relations in the United States and other societies. Admission by permission of instructor. Same as HIST 6312 and LAW 6596.

SOC 6290. Principles of Demography. 3 Credits.

Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as ECON 6290/ GEOG 6290/ STAT 6290.

SOC 6291. Methods of Demographic Analysis. 3 Credits.

Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as ECON 6291/ GEOG 6291/ STAT 6291.

SOC 6295. Research. 1-12 Credits.

Independent study and special projects. Before permission is granted to register for Soc 6295, the student must submit a written plan of study for the approval of the staff member of the department who will be directing the research. May be repeated once for credit but to no more than a total of 6 credits.

SOC 6998. Thesis Research. 3 Credits.**SOC 6999. Thesis Research. 3 Credits.**

SONOGRAPHY (SONO)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPANISH (SPAN)

Explanation of Course Numbers

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPAN 1000. Dean's Seminar. 3 Credits.**SPAN 1001. Elementary Spanish I. 4 Credits.**

Development of basic functional and communicative proficiency in Spanish. Focus on the development of listening and speaking skills, reading and writing abilities, and intercultural competence. Laboratory fee.

SPAN 1002. Elementary Spanish II. 4 Credits.

Continuation of SPAN 1001. Development of basic functional and communicative proficiency in Spanish. Focus on the development of listening and speaking skills, reading and writing abilities, and intercultural competence. SPAN 1001 is prerequisite to SPAN 1002. Laboratory fee.

SPAN 1003. Intermediate Spanish I. 3 Credits.

Development of intermediate functional and communicative proficiency in Spanish. Focus on the development of listening and speaking skills, reading and writing abilities, and intercultural competence. Prerequisite: SPAN 1002 or SPAN 1012. Laboratory fee.

SPAN 1004. Intermediate Spanish II. 3 Credits.

Continuation of SPAN 1003. Development of intermediate functional and communicative proficiency in Spanish. Focus on the development of listening and speaking skills, reading and writing abilities, and intercultural competence. Prerequisite: SPAN 1003. Laboratory fee.

SPAN 1012. Intensive Elementary Spanish. 8 Credits.

Equivalent to SPAN 1001–SPAN 1002. Laboratory fee.

SPAN 1034. Intensive Intermediate Spanish. 6 Credits.

Equivalent to Span 1003–SPAN 1004. Prerequisite: SPAN 1002 or SPAN 1012. Laboratory fee.

SPAN 2005. Advanced Spanish I. 3 Credits.

Development of advanced Spanish proficiency, with a focus on argumentative speaking and writing. Development of cross-cultural competence and analysis of historical, social, and cultural practices and perspectives of Spanish-speaking societies. Prerequisite: SPAN 1004 or SPAN 1034. Laboratory fee.

SPAN 2006. Advanced Spanish II. 3 Credits.

Continuation of SPAN 2005. Development of advanced Spanish proficiency, with a focus on argumentative speaking and writing. Development of cross-cultural competence and analysis of historical, social, and cultural practices and perspectives of Spanish-speaking societies. Prerequisite: SPAN 2005. Laboratory fee.

SPAN 2056. Intensive Advanced Spanish. 6 Credits.

Equivalent to Span 2005–SPAN 2006. Prerequisite: SPAN 1004 or SPAN 1034. Laboratory fee.

SPAN 3005. Experiencing Cuba: Past and Present. 2 Credits.**SPAN 3010W. Advanced Spanish Writing. 3 Credits.**

Development of academic writing skills in Spanish through the analysis of specific issues of general interest. Study and practice of different forms of academic writing that can be applied in various disciplines. Prerequisite: SPAN 2006 or SPAN 2056.

SPAN 3011. Spanish for Development Studies. 6 Credits.**SPAN 3015. Spanish for Heritage Speakers. 3 Credits.****SPAN 3020. Spanish for Oral Communication. 3 Credits.**

Development of effective strategies for oral communication and argumentation; expansion of vocabulary and register. Prerequisite: SPAN 2006 or SPAN 2056.

SPAN 3021. Advanced Spanish for Oral Communication–Latin America. 3 Credits.

For students enrolled in programs in Latin America. Prerequisite: SPAN 2006 or SPAN 2056.

SPAN 3022. Advanced Oral Proficiency: Environmental and Social Sustainability in Latin America. 3 Credits.

Development of advanced Spanish oral proficiency, critical content knowledge, terminology and concepts through content-based course work in the areas of environmental and social sustainability in Latin America. Critical evaluation of key environmental and social aspects of sustainability as related to Spanish-speaking countries. Focus on understanding and interpretation of language- and discipline-specific written and oral materials such as film and documentary, news, academic, literary and public media texts. Prerequisite: SPAN 2006 or above, or appropriate GWU placement score.

SPAN 3030. Business & Commercial Spanish. 3 Credits.

Structure and language of Latin American and Spanish economic institutions. Discussion of legal, financial, and administrative documents. Oral and written reports. Prerequisite: SPAN 2006.

SPAN 3035. Spanish Language and Culture: Advanced. 3 Credits.**SPAN 3040. Advanced Spanish Service-Learning. 3 Credits.**

Advanced oral and written work through community engagement, with consideration of social change and reflection on civic engagement, leadership, and service. Students work on local community service projects. Prerequisite: SPAN 2006 or SPAN 2056. Laboratory fee.

SPAN 3100. Readings in Spanish and Latin American Literature. 3 Credits.

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. Spanish and Latin American literatures in their cultural contexts. Introduction to methods of literary analysis and criticism. Prerequisite: SPAN 2006 or SPAN 2056.

SPAN 3100W. Readings in Spanish and Latin American Literature. 3 Credits.

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. Spanish and Latin American literatures in their cultural contexts. Introduction to methods of literary analysis and criticism. Prerequisite: SPAN 2006 or SPAN 2056.

SPAN 3210. Spanish & Latin American Civilization I. 3 Credits.

A panoramic view of the cultural and literary history of Spain and Latin America from their origins to the present. From the medieval period to the Siglo de Oro. Prerequisite: SPAN 3100. A panoramic view of the cultural and literary history of Spain and Latin America from their origins to the present. From the medieval period to the Siglo de Oro. Prerequisite: Span 3100 or equivalent.

SPAN 3220. Spanish & Latin American Civilization II. 3 Credits.

Continuation of SPAN 3210. A panoramic view of the cultural and literary history of Spain and Latin America from their origins to the present. From the 18th century to the present. Prerequisite: SPAN 3100 or equivalent.

SPAN 3300. Spanish and Latin American Literature in Translation. 3 Credits.

Dynamics of Hispanic societies and their cultures studied through literature, art, or film. Topics vary. Readings and lectures in English. The course may be repeated for credit. Laboratory fee may be required. (Fall and spring, alternate years).

SPAN 3400. Theatre of Spain and Latin America. 3 Credits.

Theatrical representation: presence and performance, body, voice, dialogue, and the unfolding of conflict. Theatrical traditions and movements may include Golden Age drama; neo-Classical and Romantic drama of the 19th century; drama of political protest; existentialist drama and the theater of the avant-gardes. Prerequisite: SPAN 3100 .

SPAN 3410. Latin American Short Fiction. 3 Credits.

Short prose narratives as agents of questioning textual meaning and subverting former literary traditions. Writers may include Arenas, Borges, Cortázar, Fuentes, García Márquez, Quiroga, Peri Rossi, Ana Lydia Vega, Zapata Olivella. Prerequisite: SPAN 3100 .

SPAN 3420. The Essayist Tradition in Latin America. 3 Credits.

Relations between state and nation in post-independence literary and political polemics of 19th-century Latin America. Topics may include the essay as a new genre for a new age; the figure of the public intellectual vis-à-vis the processes of state and nation formation; the post-colonial state and its imagined national, ethnic, racial, and economic communities. Prerequisite: SPAN 3100 .

SPAN 3430. Afro-Latin America in the Diaspora. 3 Credits.

Major issues related to the diaspora of people of African descent in Latin America: racial-ethnic identity and nation, the myth of racial democracy, ties with "the motherland," ties with other diaspora communities, emigration, the role of the arts in these questions. Prerequisite: SPAN 3100 .

SPAN 3440. Caribbean Literature and Culture. 3 Credits.

Literary and cultural trends emanating from the Spanish-speaking Caribbean, focusing on Cuba, the Dominican republic, and Puerto Rico, with some attention to the circum-Caribbean regions of Central and South America. Prerequisite: SPAN 3100 .

SPAN 3500. Medieval Spanish Literature. 3 Credits.

Reading and analysis of the major literary texts from the 11th through the 15th century. Attention paid to linguistic aspects of Old Spanish. Prerequisite: SPAN 3100 .

SPAN 3510. Golden Age Literature. 3 Credits.

Major texts of the 16th and 17th centuries. Topics may include lyric poetry and the "invention" of subjectivity; prose fiction; comedia and the relation between private and public life; humanism and the classical tradition; the invention of the press, the status of writing, and the new culture of the book; the (post)modernity of Golden Age literature. Prerequisite: SPAN 3100 .

SPAN 3520. Latin American Colonial Literature. 3 Credits.

Analysis of chronicles, essays, memoirs, epistolary exchanges, and poetry contextualized vis-à-vis the medieval and Renaissance values of Imperial Spain. Authors may include Cabeza de Vaca, Bartolomé de las Casas, Colón, Cortés, Díaz del Castillo, El Inca Garcilaso de la Vega, Sor Juana Inés de la Cruz, Rodríguez Freile, Sepúlveda. Prerequisite: SPAN 3100 .

SPAN 3530. Enlightenment Spain. 3 Credits.

Analysis of chronicles, essays, memoirs, epistolary exchanges, and poetry contextualized vis-à-vis the medieval and Renaissance values of Imperial Spain. Authors may include Cabeza de Vaca, Bartolomé de las Casas, Colón, Cortés, Díaz del Castillo, El Inca Garcilaso de la Vega, Sor Juana Inés de la Cruz, Rodríguez Freile, Sepúlveda. Prerequisite: SPAN 3100 .

SPAN 3540. Major Authors of Spain and Latin America. 3 Credits.

Close readings of the work of a major author and application of related critical and theoretical material. Authors may include J.L. Borges, G. Garcia Marquez, Clarice Lispector, M.L. Bombal, Juan Goytisolo, Juan Rulfo, Alejo Carpentier, Mañuel Puig. Prerequisite: SPAN 3100 .

SPAN 3560. Early Modern Poetry of Spain and Latin America. 3 Credits.

Study of poetic traditions and genres. Analysis of representative texts from the early modern to the contemporary periods. Authors may include: Garcilaso, Quevedo, Darío, Silva, Lorca, Neruda, Salinas, Jiménez, Gioconda Belli. Prerequisite: SPAN 3100 .

SPAN 3570. Latin American Women Writers. 3 Credits.

Works of well-established women writers (e.g., Sor Juana Inés de la Cruz, Gabriela Mistral, and Luisa Valenzuela) and of more recent writers (e.g., Elena Poniatowska, Diamela Eltit, Ana Lydia Vega, Cristina Peri-Rossi, and Laura Esquivel) discussed in relation to feminist principles of criticism. Prerequisite: SPAN 3100 .

SPAN 3580. Latin American Romanticism and Modernism. 3 Credits.

Study of two movements that shaped literary expression of Latin America at the turn of the century and influenced political and cultural thought throughout the Hispanic world. Authors may include Heredia, Echeverría, Avellaneda, Isaacs, Darío, Martí, Lugones. Prerequisite: SPAN 3100 .

SPAN 3600. Special Topics. 3 Credits.

May be repeated for credit provided the topic differs. Prerequisite: SPAN 3100 .

SPAN 3650. Literature and Dictatorship. 3 Credits.

Study of the dynamic relationship between literature and politics during periods of intense social repression and censorship in Spain and/or Latin America. Issues raised in and by literature when discourse is controlled, censored, and repressed by military dictatorships. The role of culture in understanding traumatic historical events. Prerequisite: SPAN 3100 .

SPAN 3700. Cinema of Spain and Latin America. 3 Credits.

Film as a language of cultural and historical testimony in Spanish America and Spain. Topics may include the Silent Era, Surrealism, the Mexican Golden Age of the '40s, the New Cinema of the '50s, Peronist cinema in Argentina, socialist film in Cuba, and postmodern production. May be repeated for credit. Laboratory fee. Prerequisite: SPAN 3100 .

SPAN 4410. Contemporary Narrative in Latin America. 3 Credits.

Experimental fiction in Latin America, with focus on literature of the mid-1960s through the present. Authors may include Alejo Carpentier, Julio Cortázar, Diamela Eltit, Carlos Fuentes, Cabrera Infante, Lezama Lima, García Márquez, Octavio Paz, Ricardo Piglia, Elena Poniatowska, Mario Vargas Llosa. Prerequisite: SPAN 3100 .

SPAN 4450. Mexican Literature and Culture. 3 Credits.

Study and analysis of Mexico's most significant intellectual, historical, and cultural events from the Spanish Conquest of the Aztec empire to the present. Topics include the Spanish appropriation of the Aztec Empire, literature and cultural phenomena during the colonial period, the age of independence, the Mexican revolution, and contemporary Mexico. Prerequisite: SPAN 3100.

SPAN 4460. Southern Cone Literature and Culture. 3 Credits.

Study and analysis of some of the most significant writers, ideas, texts, and films of Argentina, Chile, and Uruguay. Issues of tradition, identity, representation, modernity, gender and sexuality, and literature and politics as seen in historical context. Prerequisite: SPAN 3100 .

SPAN 4470. Exploration and Travel Writing in Latin America. 3 Credits.

Critical analysis of the writings of selected conquerors, explorers, and visitors to Latin America. Connections between travel writing and forms of knowledge and expression that interact and intersect with writings both within and outside Europe. Prerequisite: SPAN 3100 .

SPAN 4510. Cervantes Don Quixote. 3 Credits.

Issues raised in the text of Don Quijote: literature and life, words and deed, the fashioning of self, the structures of narrative, the limits and possibilities of representation, and the relation between appearance and reality, knowledge and understanding, fiction and truth. Cervantes' "invention" of the novel. Prerequisite: SPAN 3100 .

SPAN 4520. Topics in the Avant-garde. 3 Credits.

Study of the literary and artistic avant-gardes of Spain and Latin America in relation to the dialectic of enlightenment. Consideration of the avant-gardes as successful interpretations of modernity and as movements that anticipate, and in some instances instigate, the "post-modern" end of modernity. Prerequisite: SPAN 3100 .

SPAN 4540. The Myth of the Two Spains. 3 Credits.

Literature as an expression of the institutionalization of liberalism in 19th-century Spain and of official and popular resistance to this modernizing credo. Topics may include the romanticism of Quintana, Espronceda, Blanco-White and Becquer; the costumbrismo of Castro and Larra; the realism of Galdós; and the naturalism of Pardo Bazán and Clarín. Prerequisite: SPAN 3100 .

SPAN 4550. Spain's First Century without Empire. 3 Credits.

Spain's imperial crisis and its persistence throughout the 20th century as a central theme in Spanish literary and intellectual culture. Topics may include decadence and regeneration; modern Spanish nationalism and cultural imperialism; Hispanicism and pan-nationalism; the Spanish Civil War, fascism and liberalism; the transition from fascism to democracy. Prerequisite: SPAN 3100 .

SPAN 4560. Modern Poetry of Spain and Latin America. 3 Credits.

Poetry after modernism; forms and themes that characterize the work of authors such as Agustini, Guillén, Huidobro, Lezama, Mistral, Neruda, and Palés. Prerequisite: SPAN 3100 .

SPAN 4650. Literary Translation. 3 Credits.

Combination literary translation workshop and seminar on translation theory. Study of the main issues of literary translation between Spanish and English, in both directions, as seen in different writers and genres. Translation of writings on cultural, philosophic, and political issues. Prerequisite: SPAN 3100 .

SPAN 4700. Film as Text in Latin America. 3 Credits.

The basic points of filmic analysis as related to Latin American cinema. Issues of film as a genre in its own right, the particular language of cinema, relationships between written text and film, and other interdisciplinary aspects of narrative. Prerequisite: SPAN 3100.

SPAN 4800. Independent Study. 1-4 Credits.

Admission by permission of department chair and instructor. May be repeated for credit. Prerequisite: SPAN 3100 .

SPAN 4910W. Proseminar I. 3 Credits.

Required of all majors; preparation for the major field examination. Literature in relation to the other arts and the social sciences. Textual analysis, literary criticism, theory, and methods. Prerequisite: SPAN 3100 .

SPAN 4920. Proseminar II. 3 Credits.

Required of all majors. Critical analysis of Spanish and Latin American literature in historical and cultural contexts.

SPAN 4920W. Proseminar II. 3 Credits.

Continuation of SPAN 4910. Required of all majors; preparation for the major field examination. Literature in relation to the other arts and the social sciences. The concepts of literary history and the history of Spanish and Latin American literature; periods, authors, genres, topics. Prerequisite: SPAN 3100 .

SPECIAL EDUCATION (SPED)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPED 0920. Continuing Research - Masters. 1 Credit.

SPED 0940. Cont Research - Doctoral. 1 Credit.

SPED 6100. Selected Topics. 1-12 Credits.

Topics and fees announced in the Schedule of Classes.

SPED 6101. Research and Independent Study. 1-3 Credits.

Individual study or research under guidance of staff member. Admission by permission of advisor. May be repeated for credit.

SPED 6201. Introduction to Special Education. 3 Credits.

Survey course to acquaint prospective teachers with special education and to help them become aware of the various educational modifications necessary to accommodate children with special needs in a school program. (Fall, spring, and summer).

SPED 6210. Universal Design for Learning and Assessment. 3 Credits.

Overview and introduction to universal design for learning, including contemporary issues, applications of digital and assistive technologies, and tools for developing a comprehensive plan for implementation. Same as CPED 6110.

SPED 6221. Accessing Community Systems for Individuals with Disabilities. 3 Credits.

Overview of access to community systems and service delivery for individuals with special needs and their families. Material fee. (Summer).

SPED 6222. Legal Issues and Public Policy for Individuals With Disabilities. 3 Credits.

Examination, interpretation, and analysis of legislation and policies affecting the education and career development of individuals with disabilities. Emphasis on federal legislation in the context of national policy reform in disability services. Material fee. (Fall).

SPED 6223. Introduction to Brain Injury: Programs, Policies, and Resources. 3 Credits.

An overview of acquired brain injury and its effects; current trends in the field, related policy, research, and development of new resources. (Fall).

SPED 6224. Brain Function and Impact of Brain Injury on Learning and Education. 3 Credits.

Provides an in-depth understanding of neuroanatomy related to the impact of brain injury on child and adolescent development and learning to prepare educators to participate in educational assessment and planning. (Spring).

SPED 6227. Technology in Vocational Evaluation. 3 Credits.

Introduction to an array of assistive technology services and products facilitating professional interventions and vocational evaluation procedures; application to the assessment of persons with disabilities. Material fee. (Fall).

SPED 6228. Community-Based Assessment and Work Sample Development. 3 Credits.

Introduction to community-based vocational appraisal methods; development of job training analysis skills, labor market surveys, work samples; requirements of The Americans with Disabilities Act; incorporation of assistive technology; classroom theory and field work. Material fee.

SPED 6229. Interpretation and Application of Academic and Vocational Assessment Information. 3 Credits.

Specific strategies and techniques to analyze, interpret, and synthesize assessment information for the development of comprehensive academic/vocational profiles for adolescents and adults with disabilities. Observation and recording procedures, report development, and postassessment conferencing are emphasized. Material fee. (Summer).

SPED 6230. Vocational Assessment of Individuals with Disabilities. 3-6 Credits.

Investigation of vocational appraisal processes and techniques for individuals with disabilities. Includes assessment for transition using field-based assignments. Three credits of practicum experience for students specializing in vocational evaluation. Material fee. Same as CNSL 6130.

SPED 6231. Instructional Methods in Secondary Special Education and Transition. 3 Credits.

Techniques and processes used in programming for the needs of individuals with disabilities as they prepare for transition to postsecondary programs and employment. Emphasis on skills related to professional liaison and support roles in the design of instructional arrangements and cooperative training. Material fee. (Fall and spring).

SPED 6232. Foundations in Special Education, Career Development, and Transition. 3 Credits.

Overview of historical, theoretical, and philosophical foundations of career development and transition. Explores directions for career development/transition practices in the context of educational reform and social and political change. Material fee. (Fall).

SPED 6233. Curriculum in Secondary Special Education and Transition. 3 Credits.

Theory and practice in planning, implementing, and evaluating curriculum for individuals with disabilities. Emphasis on techniques for modifying curriculum and materials for individualized programming. Requires field-site curriculum implementation. Material fee. (Fall and spring).

SPED 6234. Seminar in Advanced Writing and Professional Presentation. 3-6 Credits.

Analysis and development of advanced professional writing skills, including literature synthesis, persuasive writing, and proposal writing. Material fee. (Fall).

SPED 6235. Employment Models for Individuals with Disabilities. 3 Credits.

Rationale, occupational resources, and programming strategies for job placement and the development and coordination of employment programs for individuals with disabilities. Material fee.

SPED 6236. Introduction to Career and Career-Technical Education and Transition Services. 3-6 Credits.

Introduction to programs and services that provide career development and transition planning for individuals with disabilities. Material fee. (Summer).

SPED 6237. Learning Strategies, Assessment, and Instruction for Individuals with Learning Disabilities. 3-6 Credits.

Theory and practice in evidence-based reading interventions. Learning strategies; content enhancement focused on literacy and self-determination. Material fee. (Spring and summer).

SPED 6238. Issues in Educating Individuals with Learning, Emotional, and Intellectual Disabilities. 3 Credits.

Introduction to the academic, cognitive, social, and emotional characteristics of individuals with learning disabilities; etiological theories; educational service delivery models, with particular emphasis on the adolescent with learning disabilities. Policy issues, continuum of services, and the transition from school to post-school environments. Material fee. (Fall and spring).

SPED 6239. Collaboration for Professionals Working with Students with Disabilities. 3 Credits.

Exploration of attitudes and beliefs about team teaching, collaboration and inclusionary environments. Development of knowledge and skills related to collaborative consultation and team teaching; interpersonal communication; the dynamics of collaborative teams; examination of the variety of environments in which special educators work. Material fee. (Fall and spring).

SPED 6240. Family Support and Guidance in Special Education. 3 Credits.

The developmental process of parenting and how that process is affected by having a child with developmental delay or disability. Family systems theory, stress and coping mechanisms, and communication and support strategies. Material fee. (Summer).

SPED 6242. Neurodevelopmental Assessment and Programming for Infants and Toddlers with Disabilities. 3 Credits.

Application of the neurodevelopmental model to techniques for developing and implementing educational programs for infants and toddlers with disabilities. Prerequisite or concurrent registration: SPED 6263 or SPED 6268 or permission of instructor. Material fee.

SPED 6243. Developmental Assessment of Infants. 3 Credits.

Theory and current practice in the assessment of infants with or at risk for developmental disabilities. Material fee. (Spring).

SPED 6244. Ethical Considerations in Neonatal and Infant Intervention. 3 Credits.

Overview of the major ethical issues involved in neonatal and infant intervention. The impact of recent and emerging technological innovations considered from medical, legal, ethical, and psychosocial perspectives. Material fee. (Spring and summer).

SPED 6245. Developmental Implications of Prematurity and Risk. 3 Credits.

Causes of prematurity. Conditions that place children at developmental and educational risk.

SPED 6253. Introduction to Autism Spectrum Disorders. 3 Credits.

Overview of autism spectrum disorders with a focus on etiology, characteristics, and evidence-based practices. Topics include defining, assessing, accommodating, and instructing students with autism spectrum disorders. (Fall, spring, and summer).

SPED 6254. Autism Spectrum Disorders and Transition to Employment and Post-Secondary Life. 3 Credits.

The policies, principles, models, and processes involved in job development, job accommodations and modifications, and employment and post-secondary placement services for individuals with autism and related disabilities. Legislation is reviewed in terms of its impact on placement of persons with autism who will transition into the workplace and/or post-secondary education. (Fall, spring, and summer).

SPED 6255. Collaboration with Systems and Families. 3 Credits.

Overview of models and strategies for coordinating services across disciplines and among school and community agencies for special populations. Emphasis on interdisciplinary team coordination, communication, decision making, planning, and follow-up for individuals with disabilities. Material fee. (Fall, spring, and summer).

SPED 6260. Developmental Assessment in Special Education. 3 Credits.

Examination of formal psychoeducational tests used with preschool and elementary-school-aged children. Development of formal and informal assessment techniques. Introduction to the skills necessary to write psychoeducational reports. Material fee. (Fall, spring, and summer).

SPED 6261. Practicum: Methods and Materials for Young Children with Disabilities. 3,6 Credits.

Implementation of educational strategies and materials, including designing and developing teaching materials, classroom teaching, feedback and evaluation with professor. A seminar accompanies this clinical experience. (Fall, spring, and summer).

SPED 6262. Formal Assessment of Young Children with Disabilities. 3 Credits.

Weekly seminar designed to prepare early childhood special educators to translate formal assessment data into instructional programming. Requires fieldwork with children. Material fee. Prerequisite: SPED 6260 .

SPED 6263. Development of the Infant with Special Needs. 3 Credits.

The processes of normal infant development and interrelationships among areas of development; relationship of these processes to the growth and development of infants with or at risk for developmental disabilities. Material fee. (Fall).

SPED 6264. Medical and Genetic Conditions of Infants and Children with Developmental Disabilities. 3 Credits.

Introduction to medical and genetic conditions that affect the cognitive, language, and social development of infants and children with developmental disabilities.

SPED 6266. The Development of Language and Literacy. 3 Credits.

Within the context of typical and atypical development, the impact of various disabilities on language and literacy development. Material fee. (Fall, spring, and summer).

SPED 6267. Instructional and Assistive Technology in Early Childhood Special Education. 2,3 Credits.

Instructional strategies and assistive technology and their implications and uses for young children (0-5 yrs) in a wide variety of environments. Lectures, laboratory, and demonstrations. Material fee. (Fall).

SPED 6268. Development of Children and Youth with Disabilities. 3 Credits.

Theories of human growth and development are considered as a framework for examination of typical and atypical development of children and youth. Material fee. (Fall, spring, and summer).

SPED 6269. Etiology, Symptomatology, and Approaches to Intervention with Children with Disabilities. 3 Credits.

An in-depth examination of the causes and characteristics of various disabilities. Current principles and approaches to intervention are examined. Material fee. (Spring).

SPED 6272. Strategies for Inclusion: Addressing the Needs of Diverse Learners. 3 Credits.

Strategies by which teachers can more effectively assume the responsibility to serve all children in an inclusionary setting, including those who are second language learners and students with disabilities. Same as CPED 6172. Material fee.

SPED 6273. Impact of Culture on Education. 3 Credits.

The impact of culture and ethnicity on educational experiences. The relationship between school culture in the United States, one's own culture(s), and the cultures of diverse populations existing within our schools. Values, norms, rules, ethics, beliefs, attitudes, expectations, and assumptions of various cultures. Material fee. (Fall, spring, and summer).

SPED 6274. In-Service Planning/Programmg. 3 Credits.

SPED 6275. The Culturally and Linguistically Diverse Student with Disabilities: Policy, Research, and Trends. 3 Credits.

Educational service delivery for the culturally and linguistically diverse student. National, state, and local policies; current research in bilingual education, special education, and bilingual special education. Same as CPED 6175. Material fee.

SPED 6276. Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student. 3 Credits.

Issues in academic and psychosocial assessment of second language learners. The impact of second language acquisition and culture on the assessment process; differentiation between language difference and disability; IEP development; the use of interpreters and translators; the involvement of family and communities; standardized and alternative assessments; and legislative mandates. Same as CPED 6176. Material fee.

SPED 6277. Teaching Culturally and Linguistically Diverse Students with Disabilities. 3 Credits.

Methods and materials for teaching students with disabilities who are English language learners. Classroom management, instructional and assessment strategies, materials and curricula, and collaborating with families and communities to meet the cultural, linguistic, academic, social, and emotional needs of students in various settings. Material fee.

SPED 6280. Developmental Assessment of Adolescents. 3 Credits.

Formal and informal psychoeducational assessment; assessment instruments commonly used with upper-elementary, junior, and senior high school students; the writing of psychoeducational reports. Material fee. (Spring).

SPED 6283. The Urban Impact on Children and Youth with Disabilities. 3 Credits.

Effects of the total environment in which inner-city children live on their ability to learn and their cognitive, social-behavioral, and physical/health development. Material fee. (Fall).

SPED 6288. Characteristics of Individuals with Learning, Emotional, and Intellectual Disabilities. 3 Credits.

An in-depth examination of typical and atypical growth and development, psychiatric diagnosis and psychosocial development issues, and general and specific characteristics of the student with serious emotional disabilities. May be repeated for credit. Material fee. (Fall and spring).

SPED 6290. Affective Development and Behavior Management in Special Education. 3 Credits.

Theory, programming, and behavior management strategies from theoretical and practical points of view. Material fee. (Fall and spring).

SPED 6299. Federal Education Policy Institute. 3 Credits.

The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as CPED 6199.

SPED 6990. Internship in Teaching Children with Emotional and Behavioral Disabilities: Assistant Teacher. 3-6 Credits.

The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as CPED 6199.

SPED 6991. Internship in Teaching Children with Emotional and Behavioral Disabilities: Co-Teacher. 3-6 Credits.

Continuation of SPED 6990. Graduate students become the primary teaching team in the classroom with ongoing supervision. Graduate students plan and apply psychoeducational teaching strategies with children with emotional and behavioral disabilities. Refinement of instructional and behavior management strategies. Weekly seminar continues. Material fee.

SPED 6992. Behavior Management Practicum: Adolescents with Disabilities. 3 Credits.

Field-based examination of theory of behavior development and techniques for classroom management. Material fee. (Summer).

SPED 6993. Internship: Teaching Young Children with Disabilities. 3,6 Credits.

Supervised internship in early childhood special education. Weekly seminar. Material fee. (Spring and summer).

SPED 6994. Internship: Early Intervention. 3-6 Credits.

Supervised internship in early intervention. Weekly seminar. Material fee. (Fall, spring, and summer).

SPED 6995. School- and Community-Based Internship in Special Education and Transition. 1-9 Credits.

A 50- to 450-hour supervised internship in school- and community-based settings involved in career, vocational, and transition services. (Fall, spring, and summer).

SPED 6996. Teaching Internship in Transition Special Education. 3-6 Credits.

Supervised teaching internship; seminar required. Permission by instructor. Material fee.

SPED 6997. Internship in Teaching Culturally and Linguistically Diverse Students with Disabilities. 3-6 Credits.

Supervised internship and weekly seminar. A full-time, field-based teaching experience working with students with disabilities who are English language learners. Writing an appropriate IEP, interacting with families and communities, and planning and implementing instructional approaches and strategies. Material fee.

SPED 8100. Selected Topics. 1-12 Credits.

Topics and fees announced in the Schedule of Classes.

SPED 8101. Research and Independent Study. 1-3 Credits.

SPED 8301. Research Seminar in Special Education. 1-12 Credits.

Participation in a small group with a selected faculty member; research on and discussion of an area of common interest. Admission by permission of instructor.

SPED 8303. Administration and Supervision of Special Education. 3 Credits.

Philosophy and nature of special education; program organization, administration, and development. Surveying local needs; program evaluation and supervision. Admission by permission of instructor. Material fee.

SPED 8304. Research and Trends in Special Education. 3 Credits.

Emphasis on topical research issues, problems of conducting research, and research syntheses. Material fee. (Fall and spring).

SPED 8305. Foundations of Neuroscience in Special Education. 3 Credits.

SPED 8306. Advanced Study in Development Science and Variance I: The Early Years. 3 Credits.

Consideration of cognitive neuroscience research on developmental issues of infancy and early years; assessment, identification, and related prevention and intervention. Prerequisite: SPED 8305.

SPED 8308. Preparation for the Professoriate in Special Education. 3 Credits.

Philosophical, ethical, and methodological aspects of personnel preparation in university and field-based programs; opportunities for practice in pedagogical design and delivery. Material fee. (Spring).

SPED 8310. Advanced Study in Development Science and Variance II: The Later Years. 3 Credits.

Consideration of cognitive neuroscience research on adolescent development, including executive functioning, self-regulation, atypicality in learning, social and emotional behavior, motivation, and attention. Prerequisite: SPED 8306.

SPED 8311. Proseminar in Special Education: The Interdisciplinary Foundations. 3 Credits.

A theoretical and research-based course that introduces students to strategies by which data from cognitive neuroscience research can be applied to conceptualizing research in special education. A doctoral student forum addresses interdisciplinary research knowledge. Prerequisite: SPED 8310.

SPED 8343. Psychoeducational Diagnosis in Special Education. 3 Credits.

The range of diagnostic and intervention strategies applicable to the student who presents psychosocial and related learning difficulties. Admission by permission of instructor. Material fee.

SPED 8345. Consultation and the Change Process. 3 Credits.

Consultation models from organizational development, organizational psychology, and mental health applied to professional practice in education and special education. Material fee. (Spring).

SPED 8352. Disability and Public Policy. 3 Credits.

Overview of current legislation and public policy affecting education, employment, and civil rights of individuals with disabilities. The evolution of disability policies and their relationship to principles of social justice. Material fee. (Fall).

SPED 8353. Post-Master's Internship in Special Education. 1-6 Credits.

Supervised professional internship in college teaching, administration, supervision, research, or policymaking. Internships are individually arranged. Admission by permission of instructor. (Fall, spring, and summer).

SPED 8354. Doctoral Internship: Special Education. 1-6 Credits.

Supervised professional internship in research college teaching, administration, policymaking, or private agency function. Admission by permission of advisor. (Fall, spring, and summer).

SPED 8360. Interdisciplinary Techniques in the Diagnostic Process in Special Education. 3 Credits.

Application of theoretical concepts of assessment; development of assessment programs; interpretation and application of interdisciplinary diagnostic evaluations. Prerequisite: SPED 6260, and permission of instructor. Material fee.

SPED 8998. Doctoral Seminar in Special Education. 3-6 Credits.

Review of literature in a topical area; preparation of a dissertation proposal and a manuscript of publishable quality. Admission by permission of instructor and approval of major advisor. Material fee.

SPED 8999. Dissertation Research. 3,6 Credits.

Prerequisite: SPED 8998.

SPEECH AND HEARING SCIENCE (SPHR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPHR 1000. Dean's Seminar. 3 Credits.

SPHR 1011. Voice and Diction. 3 Credits.

Development of naturalness, correctness, and clarity in conversation through the study of phonetics, rate, volume, pitch, and quality in preparation for performance. Laboratory fee. (Fall, spring, and summer).

SPHR 1071. Foundations of Human Communication. 3 Credits.

An introduction to the fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior.

SPHR 1071W. Foundations of Human Communication. 3 Credits.

An introduction to the fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior.

SPHR 1072. Multicultural Issues in Human Communication. 3 Credits.

Consideration of the influences of culture and bilingualism on language development and use and on communicative interaction; experimental and ethnographic methods for studying language and communication in a multicultural society.

SPHR 1081. American Sign Language I. 3 Credits.

Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills.

SPHR 1082. American Sign Language II. 3 Credits.

Continuation of SPHR 1081. Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills. Prerequisite: SPHR 1081.

SPHR 1084. Perspectives in Deaf Culture. 3 Credits.

Introduction to the Deaf community as a linguistic and cultural minority group. The roles of deaf people in the larger society, including political activism. Generational differences concerning education, socioeconomic status, medical issues, and language. (Spring).

SPHR 2083. American Sign Language III. 3 Credits.

Continuation of SPHR 1082. Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills. Prerequisite: SPHR 1082.

SPHR 2102. Neural Substrates-SpHr & Lang. 3 Credits.**SPHR 2104. Speech and Language Disorders. 3 Credits.**

Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech-language impairment. (Fall).

SPHR 2104W. Speech and Language Disorders. 3 Credits.

Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech-language impairment.

SPHR 2105. Anatomy and Physiology for Speech and Hearing I. 0-4 Credits.

Anatomy and physiology of the respiratory, phonatory, articulatory, and resonatory subsystems of speech; swallowing; and the cranial nerves. Laboratory fee.

SPHR 2106. Anatomy and Physiology for Speech and Hearing II. 4 Credits.

Continuation of SPHR 2105. Anatomy of the ear; physiology of hearing; anatomy of the brain and spinal cord; physiology of the nervous system. Laboratory fee.

SPHR 2107. Acoustics. 0-3 Credits.

The basic acoustics needed for understanding audition, speech acoustics and perception, and instrumentation. Laboratory fee. Prerequisite or corequisite: SPHR 2130.

SPHR 2108. Introduction to Audiology. 3 Credits.

Survey of the field of audiology, including the measurement of hearing, the nature and causes of hearing impairment, hearing aids and habilitation/rehabilitation of the hearing impaired. Prerequisite: SPHR 2107; prerequisite or corequisite: SPHR 2106. Laboratory fee.

SPHR 2117. Hearing & Perception. 3 Credits.

Consideration of the psychoacoustics of the normal auditory system in terms of auditory sensitivity, loudness, pitch, masking, and binaural hearing. Topics in speech perception that build upon psychoacoustics and speech acoustics. Prerequisite: SPHR 2108.

SPHR 2130. Phonetics and Phonological Development. 3 Credits.

Detailed study of English phonetics and phonology; prespeech vocalization and phonological development; multicultural issues in phonological development; intensive practice in phonetic transcription. Prerequisite or corequisite: SPHR 2105. Laboratory fee.

SPHR 2131. Language Acquisition and Development. 3 Credits.

Theories of language acquisition; development of language from birth through adolescence; emphasis on development of semantics, syntax, morphology, and pragmatics; multicultural issues in language development. Laboratory fee. Prerequisite: SPHR 2130.

SPHR 2132. Literacy. 3 Credits.

An overview of literacy development (thinking, listening, speaking, reading, spelling, writing) with emphasis on reading and writing development. Laboratory fee. Prerequisite: SPHR 1071.

SPHR 2133. Autism. 3 Credits.

How the study of autism and related disorders may shed light on the characteristics of the mind. The broad characteristics of autism spectrum disorders, including cognitive, behavioral, and neural aspects; definitions of typical vs. atypical development; and difficulties associated with diagnosis and treatment.

SPHR 3116. Brain & Language. 3 Credits.

How the brain operates for language production and understanding and how damage to the brain can interrupt neural processes with a variety of neurolinguistic consequences. Neuroimaging and behavioral research that informs the understanding of the bases of neurolinguistic communication disorders. Prerequisite or corequisite: SPHR 2106.

SPHR 3199. Selected Topics. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

SPHR 4118. Senior Seminar. 3 Credits.

Critical evaluation of the research literature on speech and hearing; the process of scientific writing and analysis; how research can inform and improve clinical practice. For departmental majors in the senior year. Prerequisite: SPHR 2104 or SPHR 1071. Laboratory fee.

SPHR 4118W. Senior Seminar. 3 Credits.

Critical evaluation of the research literature on speech and hearing; the process of scientific writing and analysis; how research can inform and improve clinical practice. For departmental majors in the senior year. Prerequisite: SPHR 2104 or SPHR 1071. Laboratory fee.

SPHR 4119. Analysis and Modification of Communication Disorders. 3 Credits.

For department majors in their senior year. Assessment of speaker-listener behavior; acoustic, behavioral, and linguistic properties of speaker intelligibility and credibility; observation, analysis, and modification of speech and language comprehension and expression. Prerequisite: senior standing. Laboratory fee.

SPHR 4196. Independent Study. 1-6 Credits.

Independent research and special projects. Before students are permitted to register for SPHR 4196, they must submit a written proposal of the plan of study and obtain approval of the staff member who will direct the study and of the department chair.

SPHR 6201. Clinical Practicum in Speech-Language Pathology. 1-6 Credits.

Supervised clinical practice in the evaluation and treatment of speech and language disorders; counseling of clients and families; development of treatment plans and writing of evaluation and progress reports. Admission by permission of the instructor. May be repeated for up to 6 credit hours.

SPHR 6202. Clinical Practicum in Audiology. 1-6 Credits.

Supervised clinical practice in behavioral and electrophysiologic assessment of hearing, hearing aid assessment and fitting, and aural rehabilitation; counseling clients and families; writing evaluation and progress reports. Admission by permission of the instructor. May be repeated, but may not be taken for more than 6 credit hours.

SPHR 6205. Professional and Clinical Issues in Speech and Hearing. 1 Credit.

SPHR 6207. Diagnostic Procedures in Speech and Hearing. 3 Credits.

Fundamental philosophical and conceptual issues in the assessment of speech-language functioning across a wide range of disorders and diverse populations. Consideration of how assessment procedures guide treatment decisions.

SPHR 6210. Research in Communication Sciences and Disorders. 1-3 Credits.

Review of fundamental issues and methods in clinical research, including group and single-subject experimental designs. Application of clinical research methodology and findings to assessment and treatment. Development of a research prospectus. Laboratory fee. (Spring).

SPHR 6220. Disorders of Articulation and Phonology. 3 Credits.

Survey of the nature and causes of impairments of speech sound production in children and adults. Differential diagnosis of oral motor versus phonological disorders; treatment approaches; identification and modification of regional dialects and foreign accents. Laboratory fee. (Spring).

SPHR 6221. Neurodevelopmental Disorders of Speech Production. 2 Credits.

Evaluation and treatment of infants and children with neurodevelopmental speech disorders, including cerebral palsy. Emphasis on management of prespeech oral motor and feeding impairments. Laboratory fee. (Summer).

SPHR 6222. Acquired Neuromotor Disorders of Speech Production. 2 Credits.

Examination of the neuroanatomical and neurophysiological bases and acoustic and perceptual characteristics of acquired dysarthrias and apraxia of speech. Evidence-based approaches to the assessment, differential diagnosis, and treatment of these disorders. Laboratory fee. (Summer).

SPHR 6230. Pediatric Language and Speech Disorders I. 3 Credits.

Survey of current approaches for assessing and treating language delays and disorders in infants, toddlers, preschoolers, school-age children, and adolescents. Review of standardized, observational, and ethnographic approaches used in language assessment; current models of intervention and service delivery. Laboratory fee. (Fall).

SPHR 6231. Pediatric Language and Speech Disorders II. 3 Credits.

SPHR 6240. Neurogenic Communication Disorders. 3 Credits.

Differential diagnosis of acquired speech and language disorders, with an emphasis on the aphasias acquired in adulthood. Evidence-based approaches to the assessment and treatment of adult neurogenic language disorders. Laboratory fee. (Fall).

SPHR 6241. Applied Neuroanatomy. 3 Credits.

Neuroanatomy and neurophysiology of systems underlying speech, language, and hearing. Neuroimaging techniques and investigations. Applications to the assessment and treatment of communication disorders. Laboratory fee. (Fall).

SPHR 6250. Eval/Treatment-Speech Disorder. 3 Credits.

SPHR 6251. Seminar: Speech Fluency Disorders. 3 Credits.

Consideration of stuttering and other disorders of speech rate and rhythm from developmental, linguistic, physiological, and psychosocial points of view. Investigation of evidence-based approaches to assessment and treatment. (Summer).

SPHR 6260. Voice Disorders: Evaluation and Treatment. 3 Credits.

Normal anatomy and physiology of the human vocal mechanism. Nature, causes, and clinical management of functional and organic voice disorders, including laryngectomy. Laboratory fee. (Fall).

SPHR 6261. Seminar: Voice Disorders. 2 Credits.

SPHR 6276. Aural Rehabilitation. 3 Credits.

Habilitation/rehabilitation of the hearing impaired, including auditory training, speech reading, hearing aids, assistive listening devices, communication strategies, and counseling. Laboratory fee. (Fall).

SPHR 6277. Psychoeducational Management of Children With Hearing Impairment. 3 Credits.

SPHR 6281. Dysphagia. 2 Credits.

Anatomy and physiology of normal swallowing. Nature and causes of dysphagia in adults. Assessment, including clinical examination and radiologic methods; treatment. Laboratory fee. (Spring).

SPHR 6282. Augmentative Communication and Computer Applications in Communication Disorders. 2 Credits.

Principles of assessment, development, and selection of augmentative and alternative communication systems; application through case studies. Computer applications, including review of selected hardware and software and selection criteria. Laboratory fee. (Summer).

SPHR 6283. Multicultural Perspectives in Communication Development and Disorders. 2 Credits.

Application of culturally appropriate and theoretically based speech and language procedures to clinical assessment and intervention with multilingual/multicultural populations. (Spring).

SPHR 6290. Selected Topics in Clinical Audiology. 1-3 Credits.

Advanced study of selected theoretical and clinical issues. May be repeated, but may not be taken for more than a total of 6 credits. (Fall, spring, and summer).

SPHR 6291. Selected Topics in Speech-Language Pathology. 1-3 Credits.

Advanced study of selected theoretical and clinical issues regarding various aspects of practice in speech-language pathology. May be repeated but not for more than a total of 6 credit hours. (Fall, spring, and summer).

SPHR 6295. Independent Research in Speech, Language, and Hearing. 1-12 Credits.

SPHR 6998. Thesis Research. 2 Credits.

SPHR 6999. Thesis Research. 2 Credits.

STATISTICS (STAT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

STAT 1000. Dean's Seminar. 3 Credits.

STAT 1051. Introduction to Business and Economic Statistics. 3 Credits.

Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, probability distributions, sampling, estimation, tests of hypotheses, regression and correlation, with applications to business. (Fall and spring).

STAT 1053. Introduction to Statistics in Social Science. 3 Credits.

Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, sampling, estimation, tests of hypotheses, regression and correlation, with applications to social sciences. (Fall and spring).

STAT 1091. Principles-Statistical Methods. 3 Credits.

STAT 1111. Business and Economic Statistics I. 3 Credits.

Descriptive statistics, graphical methods, probability, special distributions, random variables, sampling, estimation and confidence intervals, hypothesis testing, correlation and regression. (Fall).

STAT 1127. Statistics for the Biological Sciences. 3 Credits.

Introduction to statistical techniques and reasoning applicable to the biomedical and related sciences. Properties of basic probability functions: binomial, Poisson, and normal. Data analysis, inference, and experimental design. (Spring).

STAT 1129. Introduction to Computing. 3 Credits.

Introduction to elements of computer programming and problem-solving using Pascal. Hands-on experience will be acquired through computer programming projects, including some simple statistical applications. (Fall and spring).

STAT 2105. Statistics in the Behavioral Sciences. 3 Credits.

Lecture (3 hours), laboratory (1 hour). Advanced study of statistical techniques for research problems. Analysis of variance, correlation techniques, nonparametric techniques, sampling theory. Prerequisite: an introductory statistics course and satisfactory performance on a placement examination.

STAT 2112. Business and Economic Statistics II. 3 Credits.

Continuation of Stat 1111, with emphasis on techniques of regression, chi-square, nonparametric inference, index numbers, time series, decision analysis, and other topics used in economics and business. Prerequisite: STAT 1111.

STAT 2118. Regression Analysis. 3 Credits.

Lecture (3 hours), laboratory (1 hour). Simple and multiple linear regression, partial correlation, residual analysis, stepwise model building, multicollinearity and diagnostic methods, indicator variables. Prerequisite: an introductory statistics course.

STAT 2123. Introduction to Econometrics. 3 Credits.

Same as Econ 2123.

STAT 2183. Statistical Computing Packages. 3 Credits.

Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Prerequisite: an introductory statistics course.

STAT 2183W. Intermediate Statistical Laboratory: Statistical Computing Packages. 3 Credits.

Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Prerequisite: an introductory statistics course.

STAT 3119. Analysis of Variance. 3 Credits.

Lecture (3 hours), laboratory (1 hour). Introduction to the design of experiments and analysis of variance; randomized block, factorial, Latin square designs, and analysis of covariance. Prerequisite: STAT 2118.

STAT 3187. Introduction to Sampling. 3 Credits.

Problems of sampling and sample design. Simple random, stratified, systematic, cluster, and multistage designs; control of sampling and non-sampling errors. Prerequisite: STAT 1051 .

STAT 4157. Introduction to Mathematical Statistics I. 3 Credits.

Basic concepts of probability theory, including random variables, independence, distribution theory, and sampling theory. Prerequisite: MATH 1232 .

STAT 4158. Introduction to Mathematical Statistics I. 3 Credits.

Continuation of STAT 4157. Inference procedures, including estimation, hypothesis testing, regression analysis, and experimental design. Prerequisite: MATH 1232 .

STAT 4181. Applied Time Series Analysis. 3 Credits.

Autoregressive integrated moving average (ARIMA) modeling and forecasting of univariate time series. Estimation of spectral density functions, white noise tests, and tests for periodicities. Theory and applications using SAS. Prerequisite: MATH 2233, STAT 4157- STAT 4158 or STAT 2118.

STAT 4188. Nonparametric Stat Inference. 3 Credits.

Statistical inference when the form of the underlying distribution is not fully specified. Nonparametric procedures for estimation and testing hypotheses. An introduction to robust procedures. Prerequisite: STAT 1051 .

STAT 4189. Mathematical Probability and Applications I. 3 Credits.

Probability theory, including combinatorial analysis, conditional probability, and stochastic independence. Random variables and their distributions; laws of large numbers and central limit theorem. Application of concepts to elementary stochastic processes (coin-tossing sequences, branching processes, Markov chains). Prerequisite: MATH 1232 .

STAT 4190. Mathematical Probability and Applications II. 3 Credits.

Continuation of STAT 4189. Probability theory, including combinatorial analysis, conditional probability, and stochastic independence. Random variables and their distributions; laws of large numbers and central limit theorem. Application of concepts to elementary stochastic processes (coin-tossing sequences, branching processes, Markov chains). Prerequisite: MATH 1232 .

STAT 4195. Reading and Research. 1-12 Credits.

May be repeated once for credit. Admission by permission of department chair.

STAT 4197. Fundamentals of SAS Programming for Data Management. 3 Credits.

Fundamentals of the SAS system for data management, statistical analysis, and report writing. Data modification; programming; file handling; and macro writing. Prerequisite: An introductory statistics course and STAT 1129.

STAT 4198. Special Topics. 3 Credits.

Topic to be announced in the Schedule of Classes. May be repeated for credit provided the content differs.

STAT 6104. Statistics in Management, Administration, and Policy Studies. 3 Credits.

Introductory study of statistical techniques for research problems. For graduate students in fields other than statistics who have no previous statistics training. May not be taken by graduate students in statistics.

STAT 6201. Mathematical Statistics I. 3 Credits.

Probability, distribution theory, sampling theory, estimation, sufficient statistics, hypothesis testing, analysis of variance, multivariate normal distribution. Prerequisite: MATH 2233, MATH 2184.

STAT 6202. Mathematical Statistics II. 3 Credits.

Continuation of STAT 6201. Probability, distribution theory, sampling theory, estimation, sufficient statistics, hypothesis testing, analysis of variance, multivariate normal distribution. Prerequisite: MATH 2233, MATH 2184.

STAT 6207. Methods of Statistical Computing I. 3 Credits.

Error analysis, computational aspects of linear models, sweep operator, random number generation, simulation, resampling. Optimization, numerical integration (Gaussian quadrature, Simpson's rule); E-M algorithm. Prerequisite: STAT 2118, STAT 4157- STAT 4158; MATH 2184; knowledge of a programming language.

STAT 6208. Methods of Statistical Computing II. 3 Credits.

Numerical linear algebra, matrix decomposition and eigenvalue problems. Smoothing and density estimation. Graphics, interactive and dynamic techniques for data display. Object-oriented programming. Prerequisite: STAT 2118, STAT 4157- STAT 4158; MATH 2184; knowledge of a programming language.

STAT 6210. Data Analysis. 3 Credits.

Review of statistical principles of data analysis, using computerized statistical procedures. Multiple regression and the general linear model, analysis of contingency tables and categorical data, logistic regression for qualitative responses. Prerequisite: STAT 2118, STAT 4157 or STAT 6201, and STAT 2183 .

STAT 6213. Intermediate Probability and Stochastic Processes. 3 Credits.

Discrete and continuous random variables and their distributions, conditional distributions and conditional expectation, generating functions and their applications, convergence of random variables; introduction to Brownian motion, homogeneous and nonhomogeneous Poisson processes and martingales. Prerequisite: STAT 6201– STAT 6202 .

STAT 6214. Applied Linear Models. 3 Credits.

Introduction to regression techniques for discrete and continuous response variables. The course includes a computing component using SAS and S> Prerequisite: MATH 2233 and MATH 2184.

STAT 6215. Applied Multivariate Analysis I. 3 Credits.

Application of multivariate statistical techniques to multidimensional research data from the behavioral, social, biological, medical, and physical sciences. Prerequisite: STAT 3119, STAT 4157– STAT 4158; MATH 2184.

STAT 6216. Applied Multivariate Analysis II. 3 Credits.

Continuation of STAT 6215. Application of multivariate statistical techniques to multidimensional research data from the behavioral, social, biological, medical, and physical sciences. Prerequisite: STAT 3119, STAT 4157– STAT 4158; MATH 2184.

STAT 6217. Design of Experiments. 3 Credits.

Design and analysis of single- and multiple-factor experiments. Includes block designs, repeated measures, factorial and fractional factorial experiments, response surface experimentation. Prerequisite: STAT 4157–STAT 4158; MATH 2184.

STAT 6218. Linear Models. 3 Credits.

Theory of the general linear parametric model. Includes least squares estimation, multiple comparisons procedures, variance components estimation. Prerequisite: STAT 6201– STAT 6202; MATH 2184.

STAT 6221. Design of Experiments for Behavioral Sciences. 3 Credits.

Applications of advanced experimental design to research problems in behavioral sciences and education. Prerequisite: STAT 2105 or STAT 2118 and permission of instructor. Not open to graduate students in statistics.

STAT 6223. Bayesian Statistics: Theory and Applications. 3 Credits.

An overview of Bayesian statistics, including its foundational issues, decision under uncertainty, linear models, expert opinion, and computational issues. Prerequisite: STAT 6201– STAT 6202.

STAT 6227. Survival Analysis. 3 Credits.

Parametric and nonparametric methods for the analysis of events observed in time (survival data), including Kaplan–Meier estimate of survival functions, logrank and generalized Wilcoxon tests, the Cox proportional hazards model and an introduction to counting processes. Prerequisite: STAT 6201– STAT 6202 or permission of instructor.

STAT 6231. Contingency Table Analysis. 3 Credits.

A study of the theoretical bases underlying the analysis of categorical data. Measures and tests of association; Mantel–Haenszel procedure; weighted least squares and maximum likelihood estimators in linear models; estimating equations; logistic regression; loglinear models. Prerequisite: STAT 6201– STAT 6202.

STAT 6233. Questionnaire Design. 3 Credits.

Questionnaire development from the perspective of cognitive techniques. Questionnaire issues range from choosing the mode of data collection (mail, telephone, or in-person) to selecting the respondent to the differences between asking attitude and factual questions. Pretesting the instrument chosen.

STAT 6234. Intermediate Statistical Laboratory: Statistical Computing Packages. 3 Credits.

Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Prerequisite: an introductory statistics course.

STAT 6236. Applied Sampling Techniques. 3 Credits.

Problems of sampling and sample design. Simple random, stratified, systematic, cluster, and multistate designs; control of sampling and non-sampling errors. Prerequisite: STAT 1051.

STAT 6238. Survey Management. 3 Credits.

Tools used in the management of a survey operation from the initial customer contacts through training, fieldwork, data processing, data analysis, report writing, and presentation of results. Issues in budgeting, staffing, and scheduling, with emphasis on quality management. (Fall).

STAT 6242. Regression Graphics/Nonparametric Regression. 3 Credits.

Linear regression, nonparametric regression, smoothing techniques, additive models, regression trees, neural networks, and dimension reduction methods. Prerequisite: STAT 2118; MATH 2233, MATH 2184.

STAT 6251. Risk and Reliability. 3 Credits.

STAT 6252. Statistical Methods in Bioinformatics and Computational Biology. 3 Credits.

STAT 6253. Legal Statistics. 3 Credits.

STAT 6254. Statistical Genetics. 3 Credits.

STAT 6282. Foundational Issues in Risk Analysis. 3 Credits.

Descriptive statistics, classical probability, Venn diagrams, conditional probability, Bayes' law and law of total probability. Independence and interdependence, discrete and continuous random variables. Probability models, correlation, interpretation of probability (physical, logical, personal, and subjective). The likelihood function and personal probability. Statistical inference (frequentist and Bayesian).

STAT 6283. Essentials of Risk Analysis. 3 Credits.

Utility and risk. The psychology of risk. Decision trees and decision making under uncertainty. Fault and event trees. Decision trees in risk, safety analysis, infrastructure protection. Simulating rare events. The failure rate functions. The cumulative hazard and survival function. Univariate and multivariate failure models. Causal, cascading, and interdependent failure events. Graphical analysis. Network survivability assessments.

STAT 6284. 9/11 Case Studies. 3 Credits.

Focus on 9/11-like risks to U.S. Critical Infrastructure Key Resources (CIKR). Critical overview of many approaches used in estimating risk in the CIKR arena. Real-time statistical and computer risk modeling. Topics include 18 CIKR sectors, basic risk models for CIKR assets, risk of complex targets and systems, and current state of practice.

STAT 6285. Case Studies: Environmental, Health, and Financial Risk. 3 Credits.

Risks encountered in financial markets, sustainability and climate change, and drug safety and health delivery systems. Development of models and reliable tools for optimal decision-making.

STAT 6287. Modern Theory of Sample Surveys. 3 Credits.

Application of statistical theory to the sampling of finite populations. Simple, stratified, cluster, double and subsampling. Special topics, including super-populations and randomized response. Prerequisite: STAT 4157- STAT 4158 .

STAT 6289. Topics in Statistics. 3 Credits.**STAT 6290. Principles of Demography. 3 Credits.**

Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as ECON 6290.

STAT 6291. Methods of Demographic Analysis. 3 Credits.

Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as ECON 6291.

STAT 6295. Reading and Research. 3 Credits.

May be repeated once for credit.

STAT 6298. Seminar: Special Topics. 3 Credits.**STAT 6998. Thesis Research. 3 Credits.****STAT 6999. Thesis Research. 3 Credits.****STAT 8226. Advanced Biostatistical Methods. 3 Credits.**

Statistical methods for the analysis of longitudinal data: nonparametric, fixed effects, mixed effects, generalized estimating equations. Methods for the analysis of emerging data: group sequential analysis, Brownian motion, Bayesian methods, and stochastic curtailment. Other advanced topics of current research in biostatistics. Prerequisite: STAT 6201-STAT 6202 or permission of instructor.

STAT 8257. Probability. 3 Credits.

Probabilistic foundations of statistics, probability distributions, random variables, moments, characteristic functions, modes of convergence, limit theorems, probability bounds. Prerequisite: STAT 6201- STAT 6202, knowledge of calculus through functions of several variables and series.

STAT 8258. Distribution Theory. 3 Credits.

Special distributions of statistics, small and large sample theory, order statistics, and spacings. Prerequisite: STAT 8257.

STAT 8259. Advanced Probability. 3 Credits.

Conditional expectation and martingales; weak convergence in general metric spaces and functional central limit theorems for i.i.d. random variables and martingales; applications to biostatistics. Prerequisite: STAT 8257 or an equivalent measure-theoretic introduction to probability.

STAT 8262. Nonparametric Inference. 3 Credits.

Inference when the form of the underlying distribution is unspecified. Prerequisite: STAT 6201- STAT 6202.

STAT 8263. Advanced Statistical Theory I. 3 Credits.

Decision theoretic estimation, classical point estimation, hypothesis testing. Prerequisite: STAT 6201- STAT 6202.

STAT 8264. Advanced Statistical Theory II. 3 Credits.

Asymptotic theory, hypothesis testing, confidence regions. Prerequisite: STAT 8257, STAT 8263.

STAT 8265. Multivariate Analysis. 3 Credits.

Multivariate normal distribution. Hotelling's T2 and generalized T20, Wishart distribution, discrimination and classification. Prerequisite: STAT 6201- STAT 6202.

STAT 8266. Topics-Multivariate Analysis. 3 Credits.**STAT 8271. Foundational and Philosophical Issues in Statistics. 3 Credits.**

Axiomatic underpinnings of Bayesian statistics, including subjective probability, belief, utility, decision and games, likelihood principle, and stopping rules. Examples from legal, forensic, biological, and engineering sciences. Students are expected to have a background in computer science, economics, mathematics, or operations research. Prerequisite: STAT 6201- STAT 6202.

STAT 8273. Stochastic Processes I. 3 Credits.

Fundamental notions of Markov chains and processes, generating functions, recurrence, limit theorems, random walks, Poisson processes, birth and death processes, applications. Prerequisite: STAT 6201- STAT 6202.

STAT 8274. Stochastic Processes II. 3 Credits.

Continuation of STAT 8273. Fundamental notions of Markov chains and processes, generating functions, recurrence, limit theorems, random walks, Poisson processes, birth and death processes, applications. Prerequisites: STAT 6201- STAT 6202. (Spring).

STAT 8281. Advanced Time Series Analysis. 3 Credits.

Autoregressive integrated moving average (ARIMA) modeling and forecasting of univariate and multivariate time series. Statespace or Kalman filter models, spectral analysis of multiple time series. Theory and applications using the University computer. Prerequisite: MATH 2233, STAT 6201- STAT 6202 .

STAT 8288. Modern Theory/Sample Surveys. 3 Credits.**STAT 8289. Seminar. 3 Credits.**

Admission by permission of instructor.

STAT 8375. Econometrics I. 3 Credits.

Statistical foundations for econometrics; standard methods of estimation and inference for classical and generalized regression models. Same as ECON 8375.

STAT 8376. Econometrics II. 3 Credits.

Topics may include asymptotic theory, statistical endogeneity, instrumental variables estimation, discrete and limited dependent variable models, and time-series models. Same as ECON 8376. Prerequisite: STAT 8375.

STAT 8998. Advanced Reading and Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

STAT 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

STRATEGIC MANAGEMENT AND PUBLIC POLICY (SMPP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SMPP 4900. Special Topics. 1-3 Credits.

Experimental offering; new course topics and teaching methods.

SMPP 4900W. Special Topics. 1-3 Credits.

Experimental offering; new course topics and teaching methods.

SMPP 4995. Independent Study. 1-12 Credits.

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

SMPP 6201. Business and Public Policy. 3 Credits.**SMPP 6202. Business-Government Relations. 3 Credits.**

Historical and philosophical foundations of the business-government relationship. Regulation, international trade, and corporate political activities. Public policy issues facing business and the business community's political response. Prerequisite: MBAD 6284 .

SMPP 6203. Fed Gov't Regulation-Society. 3 Credits.**SMPP 6205. Business Representation and Lobbying. 3 Credits.**

Strategies, tactics, and techniques used by business in representing itself to the legislative and executive branches and regulatory agencies of the federal government. Legal and practical constraints. Ethical considerations. (Spring).

SMPP 6206. Applied Microeconomics. 3 Credits.

Applications of economic theory to public and private decisions with emphasis on public policy analysis. Focus on market structure and its implications. Imperfect information, common property, public goods and externalities. Economic analysis of government behavior and legal institutions. Prerequisite: ECON 6217 or ECON 6219 and MBAD 6222 .

SMPP 6207. Environment, Energy, Technology, and Society. 3 Credits.

The identification, examination, and evaluation of how environment, energy, and technology are interrelated and how these interactions influence policy formulation and implementation at the international, national, regional, industrial, and organizational levels. Same as PPPA 6067.

SMPP 6208. Macroeconomic Policy and Business. 3 Credits.

Determination of national income, employment, inflation, and interest rates. The role of expectations in the economy. Impact of government purchases, tax policy, and deficits. Monetary policy institutions. The global economy and exchange rates. Prerequisite: ECON 6218 or 6219 and MBAD 6222.

SMPP 6209. Seminar: Business Economics and Public Policy. 3 Credits.

Analysis and discussion of selected issues by students and representatives of government and business. Prerequisite: SMPP 6202 or MBAD 6284.

SMPP 6210. Strategic Environmental Management. 3 Credits.

Examination and analysis of the orientation and actions of private, public, and nonprofit sectors in relation to their natural environments. Emphasis on organizational interaction and effectiveness, particularly regarding business firms and industry, on issues of environmental quality and sustainability. (Spring).

SMPP 6211. Corp. Env. Mg. in Dev. Nations. 3 Credits.**SMPP 6212. Business Law: Enterprise Org. 3 Credits.**

SMPP 6213. Management of Strategic Issues. 3 Credits.

The body of management theory and practice that has evolved to identify, analyze, and resolve strategic organizational issues. Methodology of the field; applications to critical issues in labor relations, energy and pollution, marketing and consumerism, business-government relations, and the global economy.

SMPP 6214. Consultative Processes. 3 Credits.

Theories and methods of planning, introducing, and coping with change in management through the helping process. Intended both for managers seeking an understanding of the consultative approach to planned change and for persons in staff or consultative roles seeking understanding of the consultative process. Same as MGT 6214/ TSTD 6214.

SMPP 6215. Corporate Governance and Ethics. 3 Credits.

The theory, practice, and public policy environment of corporate governance. Purpose, functioning, and responsibilities of boards of directors. Power, control, and compensation of corporate management. Shareholders and stakeholders. Corporate governance in comparative national settings. Same as ACCY 6801.

SMPP 6216. Public Policy, Governance, and the Global Market. 3 Credits.

The socioeconomic foundations of government regulation and public policy cooperation for the governance of firms, markets and globalization. The evolution of national, transatlantic and multilateral frameworks for market and civil society governance, international competition policy cooperation, regulatory harmonization and industry standards. (Same as PPPA 6018) (Summer).

SMPP 6241. GlobalCorporateResponsibility. 3 Credits.**SMPP 6271. Corporate Envir Mgmt & Policy. 1.5 Credit.****SMPP 6290. Special Topics. 1-3 Credits.**

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

SMPP 6291. Ethics and Business. 3 Credits.

An in-depth, comprehensive exploration, analysis, and evaluation of specific for profit and non-profit organization values, approaches, and outcomes related to multiple ethical ideals, systems, and practices. (Spring).

SMPP 6292. Co-Curricular Activities in Responsible Management. 0 Credits.

This 0-credit course is required for students taking the Graduate Certificate in Responsible Management. The three components include completing a project or case study with an organization or faculty member related to the CRM mission; attending a series of seminars, panel discussions, or other pre-approved events relating to responsible management and submitting written reports; and completing designated community service hours. Restricted to GWSB Graduate Students Admitted to the Graduate Certificate in Responsible Management. (Fall, spring, and summer).

SMPP 6293. American Business History. 3 Credits.

The history of American business institutions in manufacturing, distribution, transportation, and finance. Particular attention will be given to the period since industrialization, with consideration of business institutions in their economic, legal, governmental, and social contexts. Same as HIST 6322.

SMPP 6295. Interm Qual&Quant Analysis. 3 Credits.**SMPP 6297. International Management Experience. 3-6 Credits.**

Same as FINA 6297/ IBUS6297/ MGT 6297/ MKTG 6297. May be repeated for credit.

SMPP 6298. Directed Readings and Research. 1-6 Credits.

Supervised readings or research. Admission by prior permission of instructor. May be repeated once for credit.

SMPP 6299. Thesis Seminar. 3 Credits.**SMPP 6999. Thesis Research. 3 Credits.****SMPP 8311. Seminar: Public/Private Sector Institutions and Relationships. 3 Credits.**

An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as PPPA 8111. Prerequisite: doctoral degree candidate status.

SMPP 8321. Seminar in Strategic Management. 3 Credits.

Develops understanding of the major research streams in strategic management; exposure to theoretical research frameworks and methodological issues and approaches.

SMPP 8331. Seminar in Business and Public Policy. 3 Credits.

Develops understanding of the major research streams in business and public policy; exposure to theoretical research frameworks and methodological issues and approaches.

SMPP 8391. Seminar:Business Management. 3 Credits.

Examination of major current issues, both theoretical and empirical, affecting the development of the business enterprise. Topics to be announced. Emphasis on policy and strategic issues affecting the total enterprise. (Offered as the demand warrants).

SMPP 8998. Advanced Readings and Research. 1-12 Credits.

Limited to doctoral candidates preparing for the general examination. May be repeated for credit.

SMPP 8999. Dissertation Research. 1-12 Credits.

Limited to doctoral candidates. May be repeated for credit.

SUMMER SCHOLARS PROGRAM (UNSS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master’s, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SUSTAINABILITY (SUST)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master’s, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SUST 1001. Introduction to Sustainability. 3 Credits.

The concept of sustainability is both broad and specific as it is applied to areas ranging from social systems to law, engineering, public health, and natural systems. The course considers goals, principles, and practical applications, with a multidisciplinary perspective on major environmental and social issues growing out of these concerns.

SUST 3095. Sustainability Fieldwork. 0-3 Credits.

Research in the field that might include such efforts as wildlife management, pollution evaluation, or surveys. Students complete a series of reflection essays throughout the semester.

SUST 3096. Directed Research in SUST. 3 Credits.

Directed research with a GW faculty member or in a study abroad experience that might include laboratory research, archival work, or literature reviews. Students complete a series of reflection essays throughout the semester.

SUST 3097. Internship in SUST. 0-3 Credits.

A paid or unpaid internship with an organization working to implement sustainability or sustainability policy. Students complete a series of reflection essays throughout the semester.

SUST 3098. Community Service in SUST. 0-3 Credits.

Volunteer service with a nonprofit organization or federal agency working to implement sustainability or sustainability policy. Students complete a series of reflection essays throughout the semester.

TEACHER EDUCATION (TRED)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master’s, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

TRED 6365. Persp & Res in Teach Comp Sci. 3 Credits.

THEATRE AND DANCE (TRDA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master’s, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

TRDA 1000. Dean’s Seminar. 3 Credits.

TRDA 1015. Understanding the Dance. 3 Credits.

The art of dance—a lecture and experiential approach to its cultural importance, history, and creative processes. The contributions of the choreographer and dancer to society. Attendance at performances and presentations, and viewing video. Laboratory fee.

TRDA 1017. Movement Awareness. 3 Credits.

An experiential dance movement class that examines human movement and its connection to dance. Somatic concepts of Alexander, Feldenkrais, Bartenieff, and Body/Mind/Centering. (Fall and spring).

TRDA 1020. Women and the Creative Process. 3 Credits.

Consideration of questions of aesthetics and creativity through the study of art produced by women since the mid-20th century. The creation, meaning, and impact of work across the fields of visual art, dance, theatre, and music.

TRDA 1025. Understanding the Theatre. 3 Credits.

The art of the theatre; its literature, history, aesthetics, and mechanics. Contributions of the playwright, actor, director, and designer. Attendance at assigned theatrical performances. Laboratory fee.

TRDA 1035. Theatre Production. 3 Credits.

Understanding of the basic elements of theatrical production (performance, technical and management) and the collaborative artist/artisan process through discussion, observation, and practical application. Laboratory fee.

TRDA 1150. Beginning Ballet. 1 Credit.

Introduction to classical ballet technique, including basic concepts of dynamic alignment, stretch, strength, and musicality. Laboratory fee.

TRDA 1151. Beginning/Intermediate Ballet. 1 Credit.

Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1152. Beginning Modern/Postmodern Dance. 1 Credit.

Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1153. Beginning/Intermediate Modern/Postmodern Dance. 1 Credit.

Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1170. Intermediate Modern/Postmodern Dance I. 2-3 Credits.

Recommended for students with previous dance experience in jazz, ballet, hip hop, modern, or other styles. May be repeated for credit. Laboratory fee.

TRDA 1171. Intermediate Modern/Postmodern Dance II. 2-3 Credits.

Continuation of TRDA 1170. Recommended for students with previous dance experience in jazz, ballet, hip hop, modern, or other styles. May be repeated for credit. Prerequisite: TRDA 1170, or permission of instructor. Laboratory fee.

TRDA 1214. Introduction to Acting. 3 Credits.

Basic techniques of concentration, imagination, improvisation, and character development. (Fall and spring).

TRDA 1330. Basics of Production Design. 3 Credits.

Basic elements of production design and technical execution. Laboratory required. Laboratory fee.

TRDA 2160. Intermediate Ballet II. 2-3 Credits.

May be repeated for credit. Prerequisite: TRDA 1151, or permission of instructor. Laboratory fee.

TRDA 2161. Intermediate Ballet II. 2-3 Credits.

Continuation of TRDA 2160. May be repeated for credit. Prerequisite: TRDA 2160, or permission of instructor. Laboratory fee.

TRDA 2162. Intermediate/Advanced Ballet I. 2-3 Credits.

May be repeated for credit. Prerequisite: TrDa 1151 to 2160, TrDa 2160 to 2161, or permission of instructor.

TRDA 2163. Intermediate/Advanced Ballet II. 2-3 Credits.

Continuation of TRDA 2162. May be repeated for credit. Prerequisite: TRDA 2162, or permission of instructor. Laboratory fee.

TRDA 2172. Intermediate/Advanced Modern/Postmodern Dance I. 2-3 Credits.

May be repeated for credit. Prerequisite: TRDA 1171, or permission of instructor. Laboratory fee.

TRDA 2173. Intermediate/Advanced Modern/Postmodern Dance II. 2-3 Credits.

Continuation of TRDA 2172. May be repeated for credit. Prerequisite: TRDA 2172, or permission of instructor. Laboratory fee.

TRDA 2179. Contact Improvisation. 2 Credits.

A movement form that arises from the point of contact between partners who explore gravity, space, and timing in the spontaneous moment-to-moment exchange of the dance. Exploring the improvisational state of body/mind through the use of imagery, tuning the senses, mindfulness practices, and play. Laboratory fee.

TRDA 2180. Movement Improvisation/Perform. 3 Credits.

Exploring the body and its surroundings in movement, use of language, narrative, environments and contexts for creative expression, developing event and performance structures from improvisation. May be repeated for credit. Laboratory fee.

TRDA 2185. Trends in Performance. 3 Credits.

Study of the theory and practice of contemporary performance art movements and artists; political and artistic activism; scripting and scoring to create performance works based on a single art discipline or interdisciplinary arts. Laboratory fee.

TRDA 2188. African Dance. 1 Credit.

African/Caribbean dance styles and techniques, with warm-ups and center floor work of long and short movement phrases. Basic/modern/jazz terminology and definitions appropriate to intermediate/advanced/African dance are used. Emphasis on alignment, execution, musical phrasing, and the importance of rhythmic timing and nuance. (Fall).

TRDA 2189. World Dance. 3 Credits.**TRDA 2190. Gender/Indian Classical Dance. 3 Credits.****TRDA 2191. Dance History. 3 Credits.**

The history of Western theatrical dance from the late 18th century to the present. The major choreographers and their dance works through readings, lectures, video, and discussion. (Spring).

TRDA 2191W. Dance History. 3 Credits.

The history of Western theatrical dance from the late 18th century to the present. The major choreographers and their dance works through readings, lectures, video, and discussion.

TRDA 2192. Repertory/Performance. 1,2 Credit.

Participation in the processes of learning and performing dance repertory or new dance works. Audition required. Laboratory required. May be repeated for credit. Laboratory fee.

TRDA 2193. Dance Styles I. 1-12 Credits.

Forms of theatrical dance other than ballet or modern, including African dance, Angola Capoeira, music theatre, Spanish dance, world dance, Middle Eastern dance, and others. May be repeated for credit provided the topic differs. Laboratory fee.

TRDA 2194. Dance Styles II. 1-12 Credits.

Continuation of TRDA 2193. Forms of theatrical dance other than ballet or modern, including African dance, Angola Capoeira, music theatre, Spanish dance, world dance, Middle Eastern dance, and others. May be repeated for credit provided the topic differs. Laboratory fee.

TRDA 2215. Beginning Scene Study. 3 Credits.

Principles of role development, concentrating on 20th-century material. Prerequisite: TRDA 1214. Laboratory fee.

TRDA 2216. Scene Study: Voice & Character. 3 Credits.

The practice and application of voice production with reference to skeletal alignment, breathing, resonance, and articulation. Emphasis on the process of voice production and its application to performance through work on scenes and monologues. Prerequisite: TRDA 2215. Laboratory fee.

TRDA 2240. Play Analysis. 3 Credits.

Traditional and nontraditional (Aristotelian and non-Aristotelian) approaches to the analysis of dramatic literature; literary and theatrical techniques used by playwrights. Same as ENGL 2240.

TRDA 2250. Fundamentals: Dramatic Writing. 3 Credits.

A workshop in playwriting and screenwriting, with emphasis on dramatic structure. Same as ENGL 2250. Recommended preparation: ENGL 1210 and two semesters of literature courses.

TRDA 2339. Theatre Practicum. 1 Credit.

Participation in department mainstage productions in a production or management capacity under the supervision of a member of the faculty. Prerequisite: TRDA 1330. After two practicums have been completed, participation may also include performance positions, for which TRDA 1214 is prerequisite. May be repeated for a total of 6 credits. Laboratory fee.

TRDA 3131W. Theatre of Social Change. 3 Credits.**TRDA 3156. Dance & Arts Management. 3 Credits.**

Examination of dance in Washington area communities. Students are required to site visit and engage with individuals and organizations that focus on dance as it pertains to performance, therapy, management, and education. Participation in activities with a dance artist/practitioner or with a producing/service organization is required. Laboratory fee.

TRDA 3174. Advanced Modern/Postmodern Dance I. 2-3 Credits.

May be repeated for credit. Prerequisite: TRDA 2173, or permission of instructor. Laboratory fee.

TRDA 3175. Advanced Modern/Postmodern Dance II. 2-3 Credits.

Continuation of TRDA 3174. May be repeated for credit. Prerequisite: TRDA 3174, or permission of instructor. Laboratory fee.

TRDA 3182. Dance Composition I. 3 Credits.

Problems in structural and conceptual aspects of constructing dances and shaping and forming movement materials. Prerequisite: TRDA 2180; recommended: TRDA 2185. Laboratory fee.

TRDA 3183. Dance Composition II. 3 Credits.

Continuation of TRDA 3182. Emphasis on intention and content in making dances. Prerequisite: TRDA 2180; recommended: TRDA 2185. Laboratory fee.

TRDA 3186. Dance Anatomy & Kinesiology. 3 Credits.

An experiential and theoretical approach to dynamic anatomy and kinesiology as they pertain to the dancer. The student is encouraged to reach full movement potential in relation to contemporary dance techniques, performance, and injury prevention. Laboratory fee.

TRDA 3220. Scene Study: Contemporary Text. 3 Credits.

Principles of role development in the works of post-war playwrights to include both the genres of comedy and drama and the stylistic directions of realism and post-realism. Playwrights chosen may include Beckett, Pinter, Albee, Stoppard, Mamet, Labute, Norman, Simon, and Henley. Prerequisite: TRDA 2215. Laboratory fee.

TRDA 3221. Scene Study: Classical Text. 3 Credits.

Principles of role development in the works of pre-modern dramatists including Shakespeare and his contemporaries, the playwrights of the English Restoration, Molière, and other 17th- and 18th-century playwrights. Prerequisite: TRDA 2215. Laboratory fee.

TRDA 3223. Physical Performance Skills. 3 Credits.

Introduction to a variety of techniques needed by actors and performers, including mime, clowning, slapstick, mask work, and basic stage combat skills. Prerequisite: TRDA 2215. Laboratory fee.

TRDA 3225. Stage Dialects. 2 Credits.

Vocal production related to interpretation of specific texts. Focus on stage dialects and the interpretation of Shakespeare. Prerequisite: TRDA 2215. Laboratory fee.

TRDA 3227. Acting for the Media. 2 Credits.

Techniques of acting for the camera; analysis of film and television scripts from actor's point of view. Prerequisite: TRDA 2215. Laboratory required. Laboratory fee.

TRDA 3229. Audition Techniques. 3 Credits.

All aspects of the audition process: selection and rehearsal of audition monologues, handling of cold reading, etc. Prerequisite: TRDA 2215. Laboratory fee.

TRDA 3231W. Theatre of Social Change. 3 Credits.**TRDA 3240. Introduction to Dramaturgy. 3 Credits.**

Fundamentals of classical and contemporary dramaturgical practice, including analyzing plays, doing research, supporting directors and actors in rehearsal, writing program notes, and leading post-show discussions. Same as ENGL 3240.

TRDA 3245. History of the Theatre I. 3 Credits.

A dramaturg's approach to case studies of theatre in historical context. Ancient Greece through the 17th century.

TRDA 3245W. History of the Theatre I. 3 Credits.

A dramaturg's approach to case studies of theatre in historical context. Ancient Greece through the 17th century.

TRDA 3246. History of the Theatre II. 3 Credits.

Continuation of TRDA 3245. A dramaturg's approach to case studies of theatre in historical context. The 18th century through the present.

TRDA 3246W. History of the Theatre II. 3 Credits.

Continuation of TRDA 3245. A dramaturg's approach to case studies of theatre in historical context. The 18th century through the present.

TRDA 3248. Theatre Criticism. 3 Credits.

Discussion and witnessing of plays in performance, resulting in written criticism modeled on contemporary journalistic practices. Prerequisite: TRDA 3245 or TRDA 3246 or TRDA 2240/ ENGL 2240. Laboratory fee.

TRDA 3248W. Theatre Criticism. 3 Credits.

Discussion and witnessing of plays in performance, resulting in written criticism modeled on contemporary journalistic practices. Prerequisite: TRDA 3245 or TRDA 3246 or TRDA 2240/ ENGL 2240. Laboratory fee.

TRDA 3250. Intermediate Dramatic Writing. 3 Credits.

A workshop developing scripts for both theatre and film. Same as ENGL 3250. Prerequisite: ENGL 2250 or equivalent. May be repeated for credit with departmental approval.

TRDA 3331. Introduction to Lighting. 3 Credits.

Lecture (2 hours), laboratory (1 hour). Theories and practicum in lighting for theatre and dance. Laboratory fee. Prerequisite: TRDA 1330.

TRDA 3332. Makeup Design. 3 Credits.

Theory and practicum in the art of makeup design, including latex and crepe hair. Laboratory fee. Prerequisite: TRDA 1330.

TRDA 3333. Stage Management. 3 Credits.

The role and function of the stage manager in theatrical production. The basic skills needed to begin work in stage management. Emphasis on organization, documentation, and dissemination of information. Prerequisite: TRDA 1330. Laboratory fee.

TRDA 3335. Introduction to Scene Design. 3 Credits.

Fundamental study of scenic design, including historic overview, basic drawing, and rendering techniques, through the use of various mediums and script analysis. Laboratory fee. Prerequisite: TRDA 1330.

TRDA 3336. Introduction to Costuming. 3 Credits.

History of fashion in Western civilization from ancient Greece to the 20th century. Fundamental study of costume construction through specific projects. Costume construction. Prerequisite: TRDA 1330. Laboratory fee.

TRDA 3710W. Contemporary Drama. 3 Credits.**TRDA 4184. Choreography and Performance. 1-3 Credits.**

Create a dance or a performance work of individual design, including casting, rehearsal procedures, staging aspects, and public presentation. Prerequisite: TRDA 3182; recommended: TRDA 1330, TRDA 2185. May be repeated for credit. Laboratory fee.

TRDA 4191. Paris Modernism & the Arts. 3 Credits.**TRDA 4275. Directing for the Theatre. 3 Credits.**

Fundamentals of script analysis, staging, casting, and rehearsal techniques. Prerequisite: TRDA 1214, TRDA 1330; TRDA 2240/ ENGL 2240 or TRDA 3240/ ENGL 3240. Laboratory fee.

TRDA 4338. Scene Painting. 3 Credits.

The techniques and materials used in creating character in the various elements of set design. Methods include set preparation, coating, mixing, palette preparation, spraying, transfer, texturing, finishing, and wallpapering. Prerequisite: TRDA 1330. Laboratory fee.

TRDA 4595. Selected Topics. 1-3 Credits.

Topics of current interest in theatre or dance. Topics (and course fee, when charged) announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

TRDA 4595W. Selected Topics. 1-3 Credits.

Topics of current interest in theatre or dance. Topics (and course fee, when charged) announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Laboratory fee.

TRDA 4596. Independent Study. 1-6 Credits.

Independent research and special projects. Open to qualified juniors or seniors majoring or minoring in theatre or dance. Before students are permitted to register for TRDA 4596, they must submit a written proposal of the plan of study and obtain approval of the faculty member who is directing the study and the department chair.

TRDA 4598. Internship. 3,6 Credits.

Open to qualified seniors majoring or minoring in theatre or dance. Work placements with not-for-profit and commercial theatre and dance organizations for an approved number of hours per week. Admission requires departmental approval. May be taken for a maximum of 6 credits.

TRDA 4599. Honors Thesis. 3 Credits.

Directed research and/or creative project. Open to qualified seniors by permission. Arrangements must be made with a sponsoring faculty member in the department and applications must be completed early in the second semester of the junior year.

TRDA 6200. Portfolio I: Performance. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor. (Spring).

TRDA 6201. Personal Aesthetics I: The Body. 5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6202. Contemporary Dance History and Criticism. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6203. Portfolio II: Choreography/Creativity. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6204. Personal Aesthetics II: The Environment. 2 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6205. Choreography. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6206. Dance Pedagogy. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6207. Portfolio III: Artistic Initiative. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6208. New Media & Dance. 5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6209. Cultural Communities of Dance. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor. (Spring).

TRDA 6210. Personal Aesthetics III: Integration. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6211. Career Networks in Dance. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6212. Portfolio Review I: Performance. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6213. Portfolio Review II: Choreography/Creativity. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6214. Portfolio Review III: Artistic Initiatives. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6296. Research Project I. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6299. Research Project II. 5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6331. Intermediate Lighting Design. 3 Credits.

Theory and execution of lighting design for theatre and dance. May be repeated for credit. Prerequisite: M.F.A. candidacy and permission of instructor. Laboratory fee.

TRDA 6335. Intermediate Scene Design. 3 Credits.

Development of advanced skills of scenic design, including script analysis, needs assessment, research techniques, conceptual design development, drawing/ rendering techniques, preparation of construction documentation and fabrication management. Prerequisite: M.F.A. candidacy and permission of instructor. Laboratory fee.

TRDA 6336. Intermediate Costume. 3 Credits.

Basic techniques of costume design through specific projects. Various rendering techniques consistent with the historical period concerned. May be repeated for credit. Prerequisite: M.F.A. candidacy and permission of instructor. Laboratory fee.

TRDA 6338. Scene Painting. 3 Credits.

Development of the skills of painting needed for the reproductive craft of theatrical painting. Prerequisite: M.F.A. candidacy and permission of instructor. Laboratory fee.

TRDA 6340. Period Styles. 3 Credits.

A broad perspective of major European and American cultures through analysis of the interiors, furniture, textiles, fashion, and architecture of major civilizations/ historical periods from Egypt to the present. Prerequisite: M.F.A. candidacy and permission of instructor. Laboratory fee.

TRDA 6342. Pattern Making. 3 Credits.

Pattern drafting and draping methods, based on contemporary and historical clothing. Prerequisite: M.F.A. candidacy and permission of instructor. Laboratory fee.

TRDA 6344. Production Drafting. 3 Credits.

Development of drafting skills for production: groundplans and shop documents. Traditional hand drafting and computer assisted design. Prerequisite: M.F.A. candidacy and permission of instructor. Laboratory fee.

TRDA 6346. Advanced Studies in Design: Collaborative Studies. 3 Credits.

Development of an ability to design and work within a collaborative or teambased environment through visual and verbal communication, script analysis, concept development, and research techniques. Prerequisite: M.F.A. candidacy and permission of instructor. Laboratory fee. May be taken for a total of 15 credits.

TRDA 6348. Techniques in Design Presentation. 3 Credits.

The various techniques used in costume and scenic design presentations, such as rendering with paint, pencil, ink, and electronic media. Prerequisite: M.F.A. candidacy and permission of instructor. Laboratory fee.

TRDA 6595. Selected Topics. 1-3 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor. May be repeated for credit.

TRDA 6596. Independent Research in TRDA. 1-12 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.
May be repeated for credit.

TRDA 6598. Internship. 1-12 Credits.

Internships with theatre companies or arts organizations, including conference and/or seminar. May be taken for a total of 12 credit hours. Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6998. Thesis Research. 3 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6999. Thesis Research. 3 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TOURISM STUDIES (TSTD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

TSTD 3001. Intro-Tourism/Hospitality Mgt. 3 Credits.

Historical overview and survey of the tourism and hospitality industry, with emphasis on the travel market, delivery of hospitality services, professional roles, and emerging trends. (Fall, spring, and summer).

TSTD 3002. Passenger Transportation Systm. 3 Credits.

Survey of passenger transportation modes. Emphasis on airline operations, marketing communications, and distribution channels. (Fall).

TSTD 3101. Sport & Event Business Mgt. 3 Credits.

An overview of business opportunities related to sport and events. Emphasis on sport and event facilities and event management; product manufacturing, merchandising, and licensing; media and publications; and athlete representation. (Fall).

TSTD 3102. Sport and Event Marketing. 3 Credits.

Application of marketing theories and practices to sport and events. Sponsorship, endorsement proposals, public relations, and promotional campaigns. Prerequisite: BADM 3401.

TSTD 3102W. Sport and Event Marketing. 3 Credits.

Application of marketing theories and practices to sport and events. Sponsorship, endorsement proposals, public relations, and promotional campaigns. Prerequisite: BADM 3401.

TSTD 3301. Hospitality Industry Managemnt. 3 Credits.

An overview of the basic principles and practices involved in the management, operation, marketing, and financing of hotels, restaurants, and other hospitality goods and services. (Fall).

TSTD 3302. Financial Mgt-Tourism/Hospitly. 3 Credits.

Basic principles of planning and managing tourism resources, developments, and facilities in relation to investment constraints and opportunities. Financial monitoring and control of hospitality facilities and related leisure services. Prerequisite: BADM 3501.

TSTD 3303. International Experiences. 1-6 Credits.

Travel to a foreign country for study of a specific topic. May be repeated for credit with permission of the advisor. (Fall, spring, and summer).

TSTD 4101. Issues in Sport & Event Mgmt. 3 Credits.

A discussion of policies, procedures, organizational structures, issues, and trends in sport and events, from amateur to professional. (Spring).

TSTD 4102. Practicum. 1-3 Credits.

Fieldwork, internship, and/or instructional practice, including conference and/or seminar. Admission by permission of instructor. May be repeated once for credit with permission of advisor.

TSTD 4301. Travel Marketing Communication. 3 Credits.

Review of basic advertising, public relations, and sales techniques, applied to the tourism and hospitality industry. Current practices and case studies. (Spring).

TSTD 4900. Special Topics. 1-3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit. (Fall, spring, and summer).

TSTD 4995. Independent Study. 1-3 Credits.

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

TSTD 6214. Consultative Processes. 1-6 Credits.

Theories and methods of planning, introducing, and coping with change in management through the helping process. Intended both for managers seeking an understanding of the consultative approach to planned change and for persons in staff or consultative roles seeking understanding of the consultative process. Same as MGT 6214/ SMPP 6214.

TSTD 6220. International Hotel Management. 3 Credits.

The study of multinational hospitality operations, with emphasis on U.S. corporate involvement in and planning for overseas expansions. Political, economic, cultural, financial, and legal aspects inherent in the international business environment. (Fall).

TSTD 6221. Hotel/Resort Market Analysis. 3 Credits.

Analysis of market demand for accommodation in a tourism destination; valuation methods for determining market value of a hotel/resort project; project management for hotel/resort development. (Spring).

TSTD 6230. Organization and Management of Airlines. 3 Credits.

Overview of domestic and international passenger air transportation systems. Analysis of planning, financing, operating, marketing, and evaluating airline transportation systems. Legal and regulatory aspects of airline operations. Development of infrastructure and related support services.

TSTD 6249. Sustainable Destination Development. 3 Credits.

Relationship of tourism and sustainable development; specific emphasis on cultural, environmental, and economic impacts and trends. (Fall).

TSTD 6250. Destination Management. 1.5 Credit.

Organization and management concepts, theory, and issues, stressing application of theory through analysis of case examples drawn from the tourism and hospitality industry. Prerequisite: TSTD 3001 .

TSTD 6251. Quantitative Applications in Tourism/Hospitality Management. 3 Credits.

Application of quantitative methods in tourism and hospitality management research. Procedures and methodology for collecting data, summarizing and interpreting data, and drawing conclusions based on the data. (Fall).

TSTD 6260. Destination Economics. 3 Credits.

Tourism development approaches, contexts, and consequences for local/regional destinations; application of financial management concepts to the feasibility study of a proposed tourism-related facility; and evaluation of the sustainability of a tourism development strategy. (Fall).

TSTD 6261. Tourism Planning. 3 Credits.

Integrated planning for tourism organizations; development of comprehensive tourism projects; consideration of basic concepts, approaches, and models. (Spring).

TSTD 6262. Tourism Policy Analysis. 1.5 Credit.

Components of tourism policy, including development of tools for tourism policy analysis and description of tourism organizations in the government and private sector. (Spring).

TSTD 6263. Destination Marketing. 3 Credits.

Concepts and techniques employed in marketing tourism industry services and development of the annual marketing plan. (Fall).

TSTD 6264. Sport Marketing. 3 Credits.

Application of marketing theories to sport and events. Case examples of marketing athletes, teams, facilities, sport products and organizations, as well as using sport or events as a marketing tool for products. Writing sponsorship and endorsement proposals and incorporating sport into an integrated marketing plan. Prerequisite: MBAD 6273 .

TSTD 6265. Sport Law: Contracts and Negotiations. 3 Credits.

Examination of legislation and specific case law as related to professional and amateur athletes, sport events, licensed merchandise, broadcast and sponsorship rights. Topics include labor and anti-trust law; contract negotiation, specifications, and interpretation. (Spring).

TSTD 6266. Sport and Event Facility Management. 3 Credits.

Financing, market analysis, design, operations, and marketing of sport and event facilities from stadiums and arenas to amphitheaters and convention centers. (Spring).

TSTD 6267. Sport Media and Communications. 3 Credits.

Concepts and practices of sport public relations, media relations and management, the Internet, and other media utilized in sports. Press releases, publications, crisis management, and press operations. (Summer).

TSTD 6270. Tourism and Hospitality Management Research. 3 Credits.

Survey research and other research methods and their applications to tourism, hospitality, sport, event, or related management. (Spring).

TSTD 6276. Risk Management for Events and Meetings. 3 Credits.

Risk and liability issues that may arise in the planning and management of events, meetings, conventions, and exhibitions. Preventative and responsive measures designed to minimize adverse impacts on event stakeholders. (Fall).

TSTD 6277. Event Management. 3 Credits.

An introduction to the theoretical and practical foundations of event management. Fundamentals of planning, budgeting, and evaluating events. Prerequisite: M.T.A. candidacy or permission of instructor.

TSTD 6278. Conference and Exposition Management. 3 Credits.

Site selection, program planning and management, exhibits, selection and use of facility, volunteers, and budget management. (Spring).

TSTD 6279. Event Entertainment Management. 3 Credits.

Event entertainment, including designing and planning the entertainment component of an event, as well as managing and marketing entertainers in an event context. (Spring).

TSTD 6280. Advanced Workshop. 1-6 Credits.

Workshops with emphasis on contemporary issues and opportunities; development of advanced professional competencies. May be repeated for credit with permission of advisor. (Fall and spring).

TSTD 6282. International Experiences. 1-6 Credits.

Travel to a foreign country for study of specific topics. May be repeated for credit with approval of advisor. (Fall, spring, and summer).

TSTD 6283. Practicum. 1-3 Credits.

For graduate students enrolled in a degree program or field offered through the department. Fieldwork, internship, and/or instructional practice, including conference and/or seminar. May be repeated once for credit with permission of advisor. (Fall, spring, and summer).

TSTD 6290. Special Topics. 1-3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

TSTD 6293. Independent Study. 1-6 Credits.**TSTD 6296. Travel Information Management Systems. 3 Credits.**

Database utilization, information analysis, reservation systems, computer applications including the Internet, and related travel management systems. (Spring).

TSTD 6297. Advanced Topical Studies. 3 Credits.

Required capstone experience for tourism administration students who do not select the thesis option. Analysis of case situations involving policy formulation or management decision making; emphasis on applied strategic planning and management approaches. (Fall, spring, and summer).

TSTD 6298. Directed Reading and Research. 1-3 Credits.

Supervised readings or research. Admission by prior permission of instructor. May be repeated for credit.

TSTD 6998. Thesis Research. 3-6 Credits.**TSTD 6999. Thesis Research. 3 Credits.**

TURKISH (TURK)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

TURK 1001. Beginning Turkish I. 0-4 Credits.

Fundamentals of speaking, understanding, reading, and writing of Modern Standard Turkish. Laboratory fee.

TURK 1002. Beginning Turkish II. 0-4 Credits.

Continuation of TURK 1001. Fundamentals of speaking, understanding, reading, and writing of Modern Standard Turkish. Laboratory fee.

TURK 2001. Intermediate Turkish I. 4 Credits.

Further development of speaking, understanding, reading, and writing skills of Modern Standard Turkish. Prerequisite: TURK 1001–TURK 1002. Laboratory fee.

TURK 2002. Intermediate Turkish II. 4 Credits.

Continuation of TURK 2001. Further development of speaking, understanding, reading, and writing skills of Modern Standard Turkish. Prerequisite: TURK 1001–TURK 1002. Laboratory fee.

TURK 3001. Advanced Turkish. 3 Credits.

This course is designated to develop proficiency in Turkish at the advanced level. Instruction and class activities are oriented toward proficiency goals. In-class practice will require extensive student involvement in interactive activities with peers as well as preparation and homework assignments outside of class. Students in this class will be afforded the opportunity to improve their writing skill, learn and use Turkish connectors, to construct cohesive paragraphs. They will be also able to practice, speaking, listening, and reading Turkish in a variety of contexts and situations that they likely encounter in Turkey.

TURK 3302. Media Turkish. 3 Credits.

This course exposes students to various types of mass media available in Turkey. Through this exposure, students will learn to analyze and use the Turkish language in step with the linguistic realities of contemporary Turkey. Newspapers and magazine articles will be read and analyzed for style and organization, and their contents will be debated and scrutinized for hidden biases. Newscasts will include current events, news bulletin, interviews, and documentaries.

UNIV INTERNATIONAL SUMMER (UNIS)

Explanation of Course Numbers

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UNIS 0001. University Intl. Summer. 0 Credits.**UNIS 0002. Intl Summer Special Topics. 0 Credits.****UNIS 1101. Intl Summer Special Topics. 0 Credits.**

UNIVERSITY WRITING (UW)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

UW 1010. College Academic English. 3 Credits.

UW 1015. Writing Sem. Summer Scholars. 3 Credits.

UW 1020. University Writing. 4 Credits.

University-level, independent research and writing. Learning to frame research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Developing strategies to draft and revise clear, engaging prose for a variety of purposes and audiences. Thematically oriented seminars; texts and course topics vary among instructors. For topics see www.gwu.edu/~uwp/fyw/uw20-courses.html.

UW 2020. Advanced Topics in Writing. 3 Credits.

For a variety of purposes and audiences, students frame scholarly research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Focus on the norms of writing in particular fields, including rhetorical approaches and stylistic conventions.

UW 2020W. Advanced Topics in Writing. 3 Credits.

For a variety of purposes and audiences, students frame scholarly research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Focus on the norms of writing in particular fields, including rhetorical approaches and stylistic conventions.

UW 2031. Equality & the Law. 3 Credits.

Introduction to how lawyers and legal scholars research and write about specific disputes that arise in the context of complex social issues. The institutional assumptions about the content and style of legal writings. Briefs, legal memoranda, law review articles, resolutions, and many other specialized legal writing forms.

UW 2031W. Equality & the Law. 3 Credits.

UW 2111. Preparation for Peer Tutors in Writing. 3 Credits.

For undergraduates accepted as tutors in the Writing Center: study and practice of techniques for prewriting, writing, and revision; readings on collaborative learning, the composing process, composition theory, cognitive psychology, critical thinking, and the teaching of writing; observation and exercises in writing, peer review, and tutoring. Limited to 15 students.

UW 2111W. Preparation for Peer Tutors in Writing. 3 Credits.

For undergraduates accepted as tutors in the Writing Center: study and practice of techniques for prewriting, writing, and revision; readings on collaborative learning, the composing process, composition theory, cognitive psychology, critical thinking, and the teaching of writing; observation and exercises in writing, peer review, and tutoring. Limited to 15 students.

UW 6213. Theory/Prac. Teaching Writing. 3 Credits.

VIETNAMESE (VIET)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master’s, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

VIET 1001. Beginning Vietnamese I. 4 Credits.

Fundamentals of grammar and pronunciation, with an introduction to reading and writing.

VIET 1002. Beginning Vietnamese II. 4 Credits.

Continuation of VIET 1001. Fundamentals of grammar and pronunciation, with an introduction to reading and writing.

VIET 1003. Intermediate Vietnamese I. 4 Credits.

Continuation of grammar, with emphasis on speaking, reading, and writing.

VIET 1004. Intermediate Vietnamese II. 4 Credits.

Continuation of VIET 2003. Continuation of grammar, with emphasis on speaking, reading, and writing.

WOMEN AND LEADERSHIP PROGRAM (WLP)

WOMEN'S STUDIES (WSTU)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master’s, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

WSTU 1000. Dean’s Seminar. 3 Credits.

WSTU 1020. Approaches to Women’s History. 3 Credits.

Exploration of critical periods of intellectual and cultural change in Western societies as influenced by and affecting women. Examination of images of women and of changing ideal types of femininity and masculinity. Aspects of law, religion, art, culture, work, and politics in relation to these topics. Same as HIST 1020.

WSTU 2120. Intro to Women's Studies. 3 Credits.

A multidisciplinary examination of historical conditions, cultural norms, and social institutions that define women's status in Western culture. Experiences of girls and women in various racial-ethnic, class, and age groups. Alternative visions for women's (and, by implication, men's) roles and status.

WSTU 2120W. Intro to Women's Studies. 3 Credits.

A multidisciplinary examination of historical conditions, cultural norms, and social institutions that define women's status in Western culture. Experiences of girls and women in various racial-ethnic, class, and age groups. Alternative visions for women's (and, by implication, men's) roles and status. Sophomore standing required.

WSTU 2121. The Anthropology of Gender: Cross-Cultural Perspectives. 3 Credits.

Anthropological representations of gender relations in "other" cultures have provided important case material for feminist theorizing of sex differences and gender roles and statuses. How a cross-cultural approach can inform our understanding of gender. Same as ANTH 2501.

WSTU 2125. Varieties of Feminist Theory. 3 Credits.

Classical and contemporary texts on feminist explanations of women's status. Relationships within the sex/gender system and arrangements based on class and race. Evaluation, through the lens of feminist theory, of several academic disciplines in the sciences, social sciences, and humanities. Prerequisite: WSTU 1020 or WSTU 2120 or permission of instructor.

WSTU 2135. A Study of Women and Media. 3 Credits.

The role media plays in women's lives. The limits and effects of a "dominant" media; representations of women in print media and television, especially advertising, and in books and film. How women have attempted to articulate a culture that serves their personal, political, and social interests.

WSTU 2380. Sexuality in US Cultural Hist. 3 Credits.

Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as AMST 2380/ HIST 2380.

WSTU 3136. Chinese Women in Myth, Literature, and Film. 3 Credits.

Women's position in Chinese cultural and political life from prehistoric myth to the present time. Confucian writing, traditional theatre, and films and novels set in China. A general survey of Chinese history establishes the context for discussions of cultural and political phenomena, such as foot binding and the one-child policy. Course conducted in English. Same as CHIN 3136.

WSTU 3136W. Chinese Women in Myth, Literature, and Film. 3 Credits.

Women's position in Chinese cultural and political life from prehistoric myth to the present time. Confucian writing, traditional theatre, and films and novels set in China. A general survey of Chinese history establishes the context for discussions of cultural and political phenomena, such as foot binding and the one-child policy. Course conducted in English. Same as CHIN 3136.

WSTU 3170. Selected Topics. 0-4 Credits.

Examination and analysis of central issues in women's studies, such as women and difference, women in media, women and violence, athletics and gender. Topic changes each semester; may be repeated for credit. (Fall and spring).

WSTU 3170W. Selected Topics. 0-4 Credits.

Examination and analysis of central issues in women's studies, such as women and difference, women in media, women and violence, athletics and gender. Topic changes each semester; may be repeated for credit.

WSTU 3195. Undergraduate Research. 1-3 Credits.

A written proposal approved by the member of the faculty who will supervise the research is required prior to registration.

WSTU 3210. Athletics and Gender. 3 Credits.**WSTU 3281. Women in Judaism. 3 Credits.**

Jewish women's spirituality as reflected in personal writings, ritual, liturgy, and midrash. Jewish women's history and legal status. Same as REL 3281.

WSTU 3310. Women and War. 3 Credits.**WSTU 3352. Women in the United States I. 3 Credits.**

Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as HIST 3352/ AMST 3352.

WSTU 3352W. Women in the United States I. 3 Credits.

Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as HIST 3352/ AMST 3352.

WSTU 3353. Women in the United States II. 3 Credits.

Continuation of WSTU 3352. Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as HIST 3353/ AMST 3353.

WSTU 3362. Black Women in U.S. History. 3 Credits.

Black women from the Middle Passage to contemporary times. Same as AMST 3362/ HIST 3362.

WSTU 3362W. Black Women in U.S. History. 3 Credits.

Black women from the Middle Passage to contemporary times. Same as AMST 3362/ HIST 3362.

WSTU 3481. Women in Islam. 3 Credits.

The ways in which Islam has articulated gender identity and male-female relationships, and conversely, how women have constructed, interpreted, and articulated Islam and their places within it. Same as REL 3481.

WSTU 3530. Women in Africa. 3 Credits.

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Same as HIST 3530.

WSTU 3881. Women, Gender, and Religion in China. 3 Credits.

A historical introduction to the concepts of body, gender, and womanhood in Confucian, Daoist, Buddhist, and popular Chinese religious traditions. Women's roles in religious ritual and practices; the influence of Christianity and modernity. Same as REL 3881.

WSTU 3981. Women in Western Religion. 3 Credits.**WSTU 4183. Practicum in Women's Studies. 3-6 Credits.**

Study of the changing status of women through supervised assignment to public and private agencies engaged in policymaking, education, political action, and research. Usually for seniors. Placement arrangements must be made the semester prior to registration; departmental permission is required.

WSTU 4199. Senior Seminar. 3 Credits.

For students completing a major or minor in women's studies. Writings of contemporary scholars and writers whose work provides critical frameworks for feminist scholarship and research. Individual or collaborative research projects are presented and submitted as written papers.

WSTU 6220. Fundamentals of Feminist Theory. 3 Credits.

A survey of historical theories significant to feminist thought, such as liberalism, socialism, evolution, psychoanalysis, and gendered spheres of social action. How these theories were revived and revised by the Second Wave of feminism since the 1960s. Brief examination of postmodernist and Third Wave feminist theorizing. (Fall).

WSTU 6221. Research Issues in Women's Studies. 3 Credits.

Analysis of the contribution of feminist or gender-relations perspectives from humanities and social science disciplines to the issues and methods of social research and social policy and practice. Topics include a review of feminist frameworks, a critique and re-evaluation of traditional academic disciplines, and analysis of current research on and for women. (Fall).

WSTU 6225. Contemporary Feminist Theory. 3 Credits.

Developments in feminist theory in the past 20 years, with a primary focus on American feminism and some consideration of European and Third World thought.

WSTU 6230. Global Feminisms. 3 Credits.

The individuals, groups, and policies that shape global agenda for women; local and international fora in which global feminisms are forged.

WSTU 6238. Feminist Ethics and Policy Implications. 3 Credits.

Feminist critiques of traditional ethical reasoning; alternative feminist ethical frameworks examined and applied to contemporary social problems (e.g., respecting cultural differences, dependency, disability). Same as PHIL 6238.

Prerequisite: Phil 2125 or 2131 or permission of instructor.

WSTU 6240. Women and Public Policy. 3 Credits.

Analysis of gender-related U.S. policy issues, such as domestic violence, military service, abortion rights, equal employment opportunity, child and dependent care, welfare, social security, and international development assistance. (Spring).

WSTU 6241. Women and the Law. 3 Credits.

Legal status of women in the United States on both the federal and state levels. Emphasis on constitutional equality, employment law, family law, reproduction and sexuality, and the criminal justice system. (Fall).

WSTU 6251. Women and Writing. 3 Credits.

Selected topics in the traditions, theory, and texts of women's literary production and culture. Same as ENGL 6540.

WSTU 6257. Gender and Sexuality. 3 Credits.

Study of new theoretical and methodological approaches developed in the anthropology of gender. Topics include postcolonialism, sexuality, and literary representations of gender. Same as ANTH 6501.

WSTU 6265. Women, Welfare & Poverty. 3 Credits.

Examination of how the causes and consequences of poverty differ for women and men; how race, class, and gender shape policy responses to poverty. The history of family assistance policy in the United States and the impact of various welfare reform efforts. Same as SOC 6265.

WSTU 6266. Gender & Criminal Justice. 3 Credits.

How understandings, practices, and theories of gender shape the workings of criminal justice systems, including issues of criminality and responses to crime, victimization and violence, and definitions of illegal behaviors. Same as SOC 6266.

WSTU 6268. Race, Gender and Class. 3 Credits.

How social structures are constructed through race, gender, and class and how they shape experience. The intersections of race, gender, and class in education, science, politics, labor markets, and social welfare policies. Same as SOC 6268.

WSTU 6270. Seminar: Selected Topics. 3 Credits.

Investigation of a current policy issue of particular concern to women, or consideration of women's status in a particular social system. Topics have included women and health; sexualities; women and Judaism; black women; gender, race, and class. May be repeated for credit. (Fall and spring).

WSTU 6271. Gender and Society. 3 Credits.

Examination of current empirical and theoretical work on gender as an organizing principle of social relations. Consideration of the relationship of gender to sex and sexuality. Same as SOC 6271.

WSTU 6280. Independent Study. 3 Credits.

May be repeated for credit. Arrangements must be made with sponsoring faculty member prior to registration.

WSTU 6283. Practicum in Women's Studies. 3-6 Credits.

Study of the changing status of women through supervised assignment to public and private agencies engaged in policymaking, education, political action, and research. Placement arrangements must be made the semester prior to registration; departmental permission is required. May be repeated for credit to a maximum of 6 credits.

WSTU 6295. Independent Research in Women's Studies. 1-3 Credits.

Individual library or field research. Arrangements must be made with the sponsoring faculty member prior to registration; a written proposal is required.

WSTU 6430. Gender, Sexuality, and American Culture. 3 Credits.

The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-Columbian settlement to 1876. Same as AMST 6430/ HIST 6430.

WSTU 6431. Gender, Sexuality, and American Culture. 3 Credits.

Continuation of WSTU 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as AMST 6431/ HIST 6431.

WSTU 6435. Readings on Women in American History. 3 Credits.

Important works in American women's history; evolution of the field in historiographical context. Same as AMST6435/HIST 6435.

WSTU 6998. Thesis Research. 3 Credits.**WSTU 6999. Thesis Research. 3 Credits.****WSTU 8275. Women and Health. 3 Credits.**

Theoretical and empirical analyses of women's health: how women's health is constructed by medical, psychological, and critical theorists; how sexism, racism, and classism contribute to women's health problems; and identification of conditions that lead to optimal health and well-being. Same as PSYC 8275.

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

YDSH 1001. Yiddish for Reading and Conversation I. 3 Credits.

Grammatical essentials of the language, appropriate reading selections, conversational exercises for beginners.

YDSH 1002. Yiddish for Reading and Conversation II. 3 Credits.

Continuation of YDSH 1001. Grammatical essentials of the language, appropriate reading selections, conversational exercises for beginners.

YIDDISH (YDSH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

FACULTY

FACULTY

(as of Fall 2013)

Columbian College of Arts and Sciences

School of Business

Graduate School of Education and Human Development

School of Engineering and Applied Science

Elliott School of International Affairs

Emeriti

Fred Paul Abramson, *Professor Emeritus of Pharmacology*
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